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SECTION OF RADIOLOGY AND PHYSIOTHERAPY

TUESDAY MORNING, JUNE 11, 1929

THE Section of Radiology and Physiotherapy of the Massachusetts Medical Society, held in the Copley-Plaza Hotel, Boston, convened at nine-fifteen o'clock, Dr. William D. McFee, of Boston, presiding.

CHAIRMAN MCFEE: The meeting of the Section of Radiology and Physiotherapy will come to order.

Because of unavoidable circumstances, Dr. Clark, of Philadelphia, has asked me to present his regrets for his absence this morning. While we are very much disappointed in not having Dr. Clark with us, fortunately, we have one of our own members who has at least a speaking acquaintance with the work of Dr. Clark. In justice to the speaker, I would state that he has had no time for preparation or review of the subject.

Dr. Clark has a very fine article on Electro Surgery which was printed in the March number of the *American Journal of Surgery*. which will be well worth reading by anyone interested in this work.

Dr. Trowbridge, of Worcester, has very kindly consented to present the first number on our program in place of Dr. Clark. Dr. Trowbridge:

DR. E. H. TROWBRIDGE, Worcester: *Mr. Chairman and Members of the Society*—We all feel a disappointment in not having Dr. Clark here this morning to present a subject which is commanding the greatest interest on the part of the medical and surgical profession. I cannot emulate what he would have said. We all know him as a pioneer in thought and action in the specialty to which he has been devoted for so many years. His fellow practitioners have profited by his research and his efforts, and I hope this Section at the close of its meeting will vote to extend our feeling of disappointment in not having him present this morning and an expression of our good will from this body of co-workers and admirers.

In presenting these films, I will ask you to carefully note the inscriptions, and you must draw your own conclusions. Afterward I would like to give you some of the work that I have been doing intra-abdominally, and in which, in my opinion, the electro-surgical knife has a most wonderful field.

I promise that I will not detain you beyond the time limit which we are allowed.

(Dr. Trowbridge showed the slides.)

I will condense this paper.

THE TREATMENT OF ABDOMINAL ADHESIONS BY THE USE OF THE ELECTRO-SURGICAL KNIFE*

BY EDWARD H. TROWBRIDGE, M.D.†

EVERY surgeon, exploring the abdominal or pelvic cavity, is confronted sooner or later, with adhesions more or less extensive, which have caused prolonged suffering and misery.

Adhesions may be the result of a previous laparotomy or the result of an inflammatory process or infection where nature has successfully walled off or protected the local infected area and bound adjacent organs or viscera firmly together.

Such a condition is frequently met in ulcer or carcinoma of the stomach or in duodenal ulcer; or in cholecystitis with or without calculi; or visceral adhesions due to any cause, and finally adhesions in various stages of development in the pelvic cavity due to acute or chronic inflammatory conditions or growths within the pelvis.

In that type of cases subjected to a laparotomy, and requiring extensive exploration, there is always present the great liability of the adhesions becoming firm, extensive and unyielding, due to their fibrinous nature.

De Costa states, "adhesions more or less extensive follow every abdominal operation."

While it is the purpose of the surgeon to prevent any such adhesions subsequently forming by his careful and gentle manipulation

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of the contents of the abdominal and pelvic cavity, by strict asepsis, by the use of moist sponges so as not to traumatize unduly the peritoneal surface, and by the omission of any chemical irritant, yet it is ofttimes impossible to prevent such adhesions which will, later on, cause constant violent pain, and render the patient an unwelcomed invalid.

It is the experience of every surgeon to be unexpectedly confronted with complicated adhesions which menace the procedure and success of any operation.

Such has been the experience of the writer and hence reference is made to the following cases, some of which were operated upon by other surgeons, who used the ordinary scalpel.

The teaching, universally advocated, not to operate for adhesions has been pretty well followed, inasmuch as the liability to a recurrence or a reformation always confronted the surgeon, and the condition of the patient would be apt to be worse than before.

This dictum has been too frequently told the patient so that no encouragement could be offered as to the success of any procedure for the relief of these adhesions.

Picture the patient experiencing constant and excruciating pain in the epigastric or duodenal region accompanying the ingestion of food, or pain along the line of incision in the abdominal wall, aggravated by the slightest movement of the body, or the pelvic disturbance when the bowels or bladder are exercising their functions, or the menstrual epoch is taking place, or in the presence of a tubercular condition in the pelvic cavity, one would not feel justified in advocating any operation in these cases unless with the assurance that the adhesions can be relieved with the least liability to a recurrence.

Some surgeons state that adhesions may become absorbed, or if formed may not cause any serious trouble. That has not been my experience.

It must be an accepted fact that gonorrhoeal adhesions grow dense and tough and hence, contract and show no tendency to become absorbed, and thus, are a constant menace to the health of the individual.

It is also evident that if adhesions are formed by infection or irritation they do not become absorbed and that when any surface or any adhesions are severed by the scalpel or scissors and a raw surface is left uncovered, the inevitable result is more adhesions.

T. B. adhesions have a tendency to become extensive and dense and inasmuch as nature is always attempting to protect the area, they must continue to increase rather than absorb.

In a majority, if not all, of the cases in which a laparotomy has been performed, and there is subsequently a reappearance of constant abdominal or pelvic pain, together with a dragging or pulling sensation along the line of incision when the patient is standing or lying on the side; where the stretching of the bowel, due to flatulence, causes this pulling sensation, relieved only by the expulsion of the gas; when deep pressure over the operated area elicits a feeling of soreness under the operated area, it is the opinion of the writer that adhesions are the disturbing element and should be relieved.

In all of my cases where an x-ray was taken, the conditions of the adhesions could not be demonstrated, not even those of a severe type.

In all my surgical operations, during the past 2 years, the electro-surgical knife has displaced the regular scalpel and especially so in intra-abdominal and pelvic cases; the superiority of this technique has been most positively demonstrated. The adhesions, instead of being separated by the use of the moist gauze, or being severed by the ordinary knife or scissors, are easily separated or cut by the electro-surgical knife leaving a surface sealed over with little or no tendency to adhere to any adjacent structure or abdominal wall.

The physical condition of each patient has been fully restored, with no reminder of former disability.

Appended are the condensed notes of five cases of the most severe type of adhesions in the writer's experience and operated upon by the use of the electro-surgical knife.

CASE 1.

Mrs. G. C., widow, age 35, 3 children.

Appendectomy, April 30, 1923. From this operation she made an excellent convalescence. On March 20, 1926, she consulted the writer complaining of a bending-down and pulling sensation beneath the line of incision; a feeling of fullness on this side with flatulence and pain of a very severe character.

The condition of this patient was so bad that she readily gave consent to a laparotomy for the relief of what was diagnosed as "Adhesions, and complication in the pelvis very probable".

March 23, 1926. Incision, by ordinary scalpel, made over the old wound and scar dissected away; on entering the abdominal cavity, found adhesions of the intestines with a band connecting bowels; also the omentum adherent to the abdominal wall—upper part; also adhesions on right side of abdomen. These were ligated and separated throughout. Also an adhesion of the bowel to the right Fallopian tube and three cysts of Morgagni and these also were dissected away. The left ovary had a cyst as large as an egg. Left ovary was removed. Abdomen closed in tiers.

On April 5, this patient left the hospital with excellent primary union of wound.

One week later, she experienced return of the severe pain under the line of incision requiring hypodermics of morphia; was very weak and exhausted; vomiting of bile-stained material; pulse and temperature normal.

Her condition became so bad as to require her returning to Hospital where on April 17 (1926) a Mayo-Robson incision (by scalpel) was made over the gall bladder and came down to more extensive adhesions than in the former operation; the omentum was adherent to median line of incision of last operation; adhesions to the fundus of the gall bladder and also adhesions of intestines, which were kinked thus accounting for the severe amount of

pain that she has experienced for the last ten days. The omentum was separated from interior abdominal wall along the line of incision; also from the gall bladder and there were several places where the bowels had turned upon themselves like a hairpin.

After the adhesions were all separated, the wound was closed with a great deal of difficulty on account of pulling of peritoneum. Two gauze drains inserted in lower angle of wound and sterilized boroglycerin was poured in cavity.

For over a year she was in fairly good health, though not able to enter any employment. She regained weight up to 130¼ lbs.

In July, 1927, she again began to show a return of the pain and burning sensation under the line of incision, accompanied with marked pulling sensation, flatulence, and nausea.

She again solicited relief, but I demurred, as the adhesions would probably reform and I could not offer her any permanent relief.

I had employed the electro-surgical knife since the previous April, and with such pronounced success that she was informed that by cutting the adhesions with this form of knife, there would be very little liability to any subsequent adhesions, and if she was willing, I would give her the benefit of this operation.

On August 11, 1927, she was re-admitted to the Harvard Private Hospital and the following notes are taken from her record:

Age 36. Date of operation, August 12, 1927. Diagnosis: Abdominal adhesions.

Mayo-Robson incision by electro-surgical knife. Came down onto a large number of adhesions binding the bowel to the peritoneum and also the bowels to themselves, requiring quite an amount of time and delicate manipulation in severing these extensive adhesions. After completing this part of the operation, the right tube and cystic ovary on right side was also removed by the electro-surgical knife.

In using this apparatus:

Dehydration—light.

Voltage—low.

Power Control—40.

Patient made an uninterrupted convalescence and now, at this writing, one year and half has expired, and she has no more abdominal symptoms, has increased to former weight and has remarried.

Case 2.

Mrs. M. P., age 30, weight 114½ lbs.

In December, 1922, had right tube and appendix removed.

On June 10, 1925, operation for extensive adhesions together with cyst of right ovary, size of an egg.

In July, 1927, complained of severe abdominal pains across lower abdomen and to the left of uterus. This patient had been x-rayed, cystoscoped, kidneys catheterized—but nothing definite was found; as patient did not improve, exploratory operation was advised and performed January 14, 1929.

On entering the abdomen, came down on multiple omental adhesions with adhesions of bowels to posterior surface of uterus, and a small cyst of left ovary. These adhesions were separated by the electro-surgical knife and cyst of ovary also removed.

Patient has made an uninterrupted convalescence, and has now regained her normal weight and health and is able to attend to household duties.

Case 3.

Mrs. V. McC., age 31, weight 93 lbs.

History revealed that nine years ago, had myomectomy and appendectomy; had not been well since operation. Complained of exhaustion, and was not able at times to fulfill her duties without effort; tenderness on pressure over line of incision.

On pelvic examination, January 10, 1929, the left side showed mass about size of tangerine orange with signs of adhesions over former median incision. Operation advised. Operation: January 21, 1929.

Exploratory. Electro-surgical knife.

Median incision, adhesions multiple, left ovarian cyst size of orange. Old scar dissected from adjacent tissue and omentum. Repaired a former attempted ventral suspension leaving uterus free from adhesions. Left broad ligament sutured to posterior wall of uterus. Right tube removed. Good ether recovery. Uninterrupted convalescence. Weight restored and now able to fulfill her duties as Superintendent of a state institution.

Case 4.

Miss E. L., age 24, weight 175 lbs.

First seen May 7, 1924, had been under osteopathic treatment 8 months. At time of examination, she presented symptoms of an irritable appendix, which was removed May 29, 1924. Convalescence excellent.

This patient at about July 9, 1925, began to complain of spasmodic attacks of vomiting, with spasmodic contractions of diaphragm accompanied with dyspnoea. These attacks would be relieved and then, after varied intervals, become extremely painful.

In May, 1926, began to complain of pain in line of incision, with "shaky" sensation of bowels at irregular intervals.

In October, 1926, pain about gall bladder which was tender on pressure; also tenderness over upper half of former appendiceal incision—no jaundice, vomiting elicited by pressure, over both tender areas.

X-ray advised and taken, and report that "No x-ray evidence of any lesion of gall bladder".

On January 12, 1928, complete radiographic and fluoroscopic gastro-intestinal examination and report submitted of "No lesion of gastro-intestinal tract shown".

This patient continued in such a deplorable state physically and mentally, that exploratory examination was advised and on March 19, 1929, patient submitted to operation and record is as follows:

"Abdomen opened by electro-surgical knife over the old scar; came down on to numerous adhesions, there being a wide band extending from the upper part of the abdominal wound to the liver and also extensive adhesions of omentum to the intra-abdominal wall around the entire length of the previous appendiceal wound. These were, with some difficulty, severed by the electro-surgical knife and ligated, everything being ultimately clear and free. Then examined the gall bladder, which was negative; also the pyloric end of the stomach; also the pelvic organs, the right ovary being small and the left showing signs of recent menstruation. Wound was then closed in tiers.

This patient made an uninterrupted convalescence and has resumed her former position as office stenographer.

Case 5.

Miss L. D., age 32.

Appendectomy 16 years ago when 16 years old. About 3 or 4 months after operation felt severe pain from time to time but no nausea. Constipation much worse after operation than before. Went to see the doctor that operated upon her and was told that the pains would go away.

Seven years ago went to the hospital for two weeks and while there was treated for ulcers of the stomach.

Symptoms always heartburn and vomiting. Later saw another doctor and was told to take strenuous exercise such as shoveling snow, etc.

Last September in convent in Canada was taken sick and doctor told her it was neglected bowels. Mother then went on and brought her home.

Went to another hospital and had x-ray taken of stomach, and they claimed that the x-ray showed

ulcers of the stomach. Dr. wanted to do a gastro-enterostomy, but mother would not permit. Had rectum dilated so as to make bowels move.

Admitted to Harvard Private Hospital, May 6, 1929. X-ray taken did not show any ulcers of the stomach, but did show a prolapse of the transverse colon down into the pelvis, with history of no movement of the bowels covering a period of one week. Had been in hospital two weeks previous for enemas.

Upon consultation it was decided to operate upon patient for adhesions.

May 15, 1929. Operation. Ether administered.

Electric scalpel used.

Light dehydration.

Low Voltage.

Power Control 35.

Incision along line of old scar and old scar tissue dissected away. Abdominal wall opened above appendix scar and came down on adhesion of the omentum to upper third of previous scar—ascending colon and adjacent splenic flexure of transverse colon was also adherent. All this was severed with the electric scalpel, leaving no raw surface along line of previous adhesions.

Peritoneum over line of adhesions sutured with continuous catgut.

Examination of gall-bladder, stomach and pelvis negative. Wound closed in tiers with D. & C. catgut. Skin with S. W. G. Good ether recovery.

After about three weeks in the hospital she was discharged in excellent condition.

In using the electro-surgical knife, the model selected and used for the past two years is the Liebel-Flarsheim (Bovie improvement), which has given extreme satisfaction.

The usual degree of dehydration, voltage, and power control has been *light* dehydration, *low* voltage and power control *40*.

The power control must be increased when a thick layer of fat or skin is to be cut, or any other resistant tissue.

The nurse in charge of the instrument must be one very familiar with the manipulation. She is to be in readiness at all time while the use of the cabinet is demanded by the surgeon.

The writer has lately been informed by the visiting nurse to all the Cancer Clinics at the local hospitals, that some surgeons have not had the same satisfaction in using the cabinet in general surgical use as the writer has had. I am convinced that the non-adherence to the minute and delicate technique has accounted for any lack of satisfaction. It is also very essential that the surgeon employing the electro-surgical knife must devote quite a period of time to experimenting with its use on various tissues and structures before employing it on the human body.

One must also be familiar with the application of the theory and fundamental principles of electricity as portrayed in Massey's scientific work entitled, "Surgery of Neoplastic Diseases by Electrothermic Methods." Also George H. Wyeth's work entitled, "Surgery of Neoplastic Diseases."

After thoroughly digesting these volumes, then read and re-read Cumberbatch's work entitled, "Diathermy", its production and uses in medicine and surgery, 1928 edition.

After completing the above program of preliminary preparation, it will be very evident that it is impossible for anyone to employ casually this technique thinking that it is as easy as the ordinary surgical scalpel.

Furthermore, the duties and responsibilities of the surgeon of to-day are such, that no one would yield to the temptation of employing the electro-surgical knife unless the technique had been thoroughly mastered.

CHAIRMAN MCFEE: The subject of Electro Surgery has been well presented by Dr. Trowbridge. Will Dr. Loder, of Boston, please open the discussion.

DISCUSSION

DR. H. B. LODER, Boston: Here in Boston we have been very slow in taking on a real asset or an addition to our surgical equipment. My own personal contact with it is in attempting to fit this real addition to our surgical equipment, into the work of a surgeon whose work isn't too well centralized, and in trving to find where electrosurgery is essential and really necessary to the welfare of the patient as against the technique that was previously used.

Of course we come first to the matter of malignancy. We have had nothing in the way of equipment that the surgeon can have that will let him work on and control or palliate malignancy in some of the inaccessible locations that can compare with this form of electrosurgery, either in the coagulating current or the desiccating current.

I think the surgeons have been slow to take this up, perhaps because it sounds very complicated, and when we poor surgeons go talk to the men who are deep in this and they begin to talk about modalities, we rather feel that we are over our depths and perhaps had better go home before we get drowned.

As I work at it from the standpoint of the every-day surgeon, I don't find that is true It is a new instrument in our hands; it is not complicated; there are some things we have to learn about it. One of the things that we have to learn in the first place is how much and how little you do it with a given amount of current, but then again that is not at all different from using an actual cautery. With the cautery you kill a little tissue, depending on how hot your cautery is, how far you put it in, and how long you leave it there.

Another thing that has held the surgeons back a little in using this, some of the earlier work was directed to inaccessible malignancies and in using ether anesthesia there were some explosions, some burns, not serious, so far as I know, but they were very distressing complications in surgery. There again it is a matter of a little more knowledge and a little more familiarity with the equipment that we have at hand.

To relieve us from that risk, that danger, that distress, of course local anesthesia has come

into a play that it didn't have five years ago. Other forms of anesthesia are well on the way that will let us use our electrical currents apparently without thought as far as any explosions are concerned.

I am going to state right now that of some twenty-five or thirty mouth cases, most of them done under ether anesthesia, I haven't seen a sign of any trouble, and that with very simple care and very simple precaution, the simple care and simple precaution being that the patient isn't given ether, actually, at the time that you are doing your work in the mouth, that a sponge is put back into the pharynx, and the patient is made to breathe through the nose, with a moist towel held over the patient's upper lip so that the respiratory air goes up instead of out. That is super-precaution, the same that you take in using a cautery around the mouth.

I think when it comes to the malignant work about the mouth, you will have to put it down that it is essential to the well-being of your patient that you do that surgery by the electrosurgical method for it can be done with a thoroughness that can't be attained by surgery in any other form. What I mean by that is the thoroughness with which it can be accomplished. It is essential to the patient for another reason. It is amazing how slight the post-operative discomfort is with the extensive tissue destruction that you have to do as compared to the same sort of tissue destruction by any other method. For instance, you excise the tongue back to the glottis and discover greatly to your surprise that three days later the patient has had one-quarter of a grain of morphine after that operation, not because anybody was stingy with it but the patient couldn't see any reason why he should have it. They are uncomfortable because their tongue is half gone and they are not accustomed to using it in that shape.

We have other locations in which we are doing very ineffective and inefficient work on any other basis. There are other regions where we are doing work that is radically out of all proportion to the gain of the patient. When I say that, I have in mind some of the rectal carcinomas which you can reach through the proctoscope and do thorough electrocoagulation of a growth as against a resection of the rectum. In these cases, we have almost no operative mortality. You can't do anything important without some operative mortality, but in these cases there are few disappointments, and with an end result that looks as if it is going to be at least as good as the gross resection of the rectum and perhaps better.

Speaking of the rectal cases brings one other point up that I want to make for the surgeons here, and that is the use of electrocoagulation for the control of bleeding, of hemorrhage, ordinary routine control of hemorrhage as against the use of catgut ligatures. After you have done it a while you will find it is so easy and time-saving that you will wonder why you wanted to use catgut, but there are some locations in which we cannot decently put on ties and we don't decently control our hemorrhages, and it is very simple to control by electrocoagulation. I think the most brilliant result that I have seen is in some of the rectal cases that come for resection of the rectum, done from below; the lower part of the two-stage operation, for instance. Those of you who have done those cases all know that you have some vessels to tie that are so far up that you work, work, work, to get on a tie, and frequently end up by some packing. You apply a test on the ends of your superior hemorrhoidal vessels by the use of the electrode and in a few seconds the clamp is off. You have controlled your bleeding, and you have saved anywhere from fifteen minutes to half an hour, and you have done it thoroughly.

Then a little word of caution to come with the use of electrocoagulation for the control of bleeding. I have recently had a very unusual post-operative complication of the breast case in which I used electrocoagulation in part. Whether the electrocoagulation has any bearing on this or not I don't know, but I have to report it to you as possibly having some bearing on it a month after a radical resection of the breast for palliation in malignancy with no expectation of cure and a good deal of skin involvement. You have the hope that you can give the patient the rest of her lifetime without an external sloughing growth and let her die of her internal metastasis, and then a month after that there is a little bit of low-grade infection along the end of the wound and some slough, the temperature goes over 100-½, and there is a peculiar cellulitis sort of infection. The patient develops a subclavian aneurysm. In one case, on the thirty-fourth day the aneurysm began to leak and leaked down through the granulating drainage wound of the original operation. With the help of some good nurses who held their fingers in the right places long enough and a crew who had gotten together promptly, and with the help of some of our friends who happened to come along about that time, that aneurysm was tied off on the first rib and the patient is out of the hospital now.

The opening at the aneurysmal sac was about as big as the end of my little finger, the aneurysm being the size of a large egg. That aneurysmal sac started from infection in the stump of one of the thoracic vessels, from its location, I am sure. It was true infectious aneurysm. Whether the wall of that artery was damaged enough by coagulation to weaken it and make it a point for the development of an aneurysm, I do not know. I don't think that that is true, but it is a possibility that you will have to carry in mind that in using coagulation for controlling hemorrhage near big vessels you must

make sure that you do not do any coagulation of the wall of the big vessel itself.

I hope the day isn't very far off when our operating rooms will be equipped with at least a small, simple electrocoagulation outfit in just the same sense that they are equipped with an actual cautery at the present time, that you think no more of asking for electrocoagulation than you do now in saying, "I want the cautery in a few minutes; have it ready."

I don't think the day will ever come when electrosurgery will entirely take the place of knife surgery. I don't think that all surgeons will give themselves the little training that is necessary to do it that way, but I am going to say frankly that I believe most of the operative surgery that is done that way is done by election, not from choice. One man prefers to do a thing one way rather than another.

I hope that the time is not far off when we will be asking for the electrode in the same sense that we now ask for the actual cautery.

DR. DALAND: I have been using the electrocoagulation method for the last four or five years, particularly in work on malignancy. It has been extremely satisfactory. I think it is the greatest thing we have had in malignant surgery since radium, and I think it is replacing radium to a large extent in many types of lesions, particularly in the mouth. As Dr. Loder said, we have used it with a good deal of success as a primary method of treatment. In some instances where the use of radium or operation has been followed by recurrence, the electrocoagulation has been used satisfactorily. In other instances where electrocoagulation has been used and there has been a recurrence, we have been able to use it a second time with good results.

In the mouth cancers that we are operating on by electrosurgery we are using colonic ether almost entirely. This is the ether oil mixture which is injected into the rectum, starting about an hour beforehand. It gives us complete relaxation. It does away with having an etherizer around the mouth; it gives a perfectly even anesthesia, and we have had no danger from any explosions. We believe that is far better for the patient than giving him a heavy dosage of ether, then starting work, letting him wake up, and then stopping and putting him down again. With the colonic ether there have been no respiratory complications, and altogether it is exceedingly satisfactory.

We have not used the cutting current very much for superficial lesions that we want to sew up. In some instances we can get away with a primary healing, but it is not by any means certain that we always will, so that wherever possible we use the knife in making a skin incision and thus insure a primary healing, and then use the electrocoagulation for the deeper structures.

I have had no experience with electrocoagulation in cancer of the rectum, such as Dr. Loder has mentioned.

DR. LESTER R. WHITAKER, Boston: I would like to mention briefly the work we are doing at the Homeopathic Hospital, chiefly by Dr. J. Emmons Briggs and myself. We have found in experimental animals that the incised wounds with the cutting current do not heal quite as well as if they are incised with a knife; that we are more likely to get a breaking down of the suture line.

We are developing new methods of gastro-enterostomy and intestinal anastomosis by electrosurgery. The best method of gastro-enterostomy that we have thus far evolved is with the coagulating sparking current to cook or kill an area on the stomach and a corresponding area on the intestine that we want to join with it, being sure that coagulation extends through the wall of the intestine and the stomach. This is insured by first cutting through the outer coats with a knife, then the edges of these charred areas are approximated with preferably a double row of stitches, although a single row is perfectly safe. We have never had a leakage. In from twenty-four to thirty-six hours on our experimental animals the charred areas have sloughed through, producing an opening from the stomach into the intestine. Of course the point to it is that no soiling is encountered; neither the stomach nor the intestine is opened; and it is somewhat quicker than the ordinary method.

Then there is another method we have developed which is more applicable to lateral intestinal anastomosis. This is not thoroughly aseptic, but practically so. It is done with a modified electrode, you might say, a curved steel wire in the shape of a hairpin, insulated everywhere except at the curved end. A posterior row of stitches is applied in the two parts of the intestine to be anastomosed, and then the two free ends of the hairpin are inserted through sections of the opposing gut one on either side of the suture line then run along inside of the gut and brought to the outside again, about two inches further on. Either arm of the hairpin underlies about two inches of the wall on either side. The loose ends are connected with the electrode. Then the row of stitches is carried right over the top of the hairpin so that only the ends joining the electrode are exposed. The sides of that hairpin are insulated with a painted-on material so that only the curved end produces a cutting effect. Then the cutting current is turned on and the instrument is simply pulled through. That makes a hole through from one side of the bowel that you are trying to anastomose into the other. As the instrument pulls out the stitches are pulled up, closing the hole from which the hairpin emerged. This method has been quite successful in our ex-

perimental operations, both for gastro-enterostomy and lateral intestinal anastomosis.

DR. LOUIS FELDMAN, Boston: My experience since 1923 with various types of electrosurgery has been very successful and the essayists have borne out that truth.

There is one important point which Dr. Trowbridge did not mention, and which Dr. Loder touched upon. I think it is very important to mention that you will get hemorrhage from large vessels unless there has been proper preparation. In other words, if you are going to do an operation in an area where the vessels are inaccessible, you should have a ligation done a week previously, then you are ready to do your electrosurgery, and you may proceed fearlessly. The small vessels, capillaries or small veins, easily reached, are very well controlled with either electro desiccation, coagulation or the cutting knife by just touching them or picking up vessel with forceps and touching the forceps, and the bleeding will stop.

Dr. Wyeth bears that out also. He states that in cases where you plan to do an area of extensive dissection in region of large vessels that you must prepare the part. I think that is very important to bear in mind, because the false impression has been created that one should fear nothing when doing electrosurgery, that one will have no trouble, that there will be no danger of hemorrhage. That is absolutely wrong. Be a surgeon primarily, a physiotherapist and electrosurgeon secondarily despite the teachings of the over-enthusiastic salesman of apparatus.

CHAIRMAN MCFEE: Is there further discussion? If not, I will ask Dr. Trowbridge to close the discussion.

DR. E. H. TROWBRIDGE, Worcester: I would like to emphasize two factors. The last speaker emphasized the fact that some of the journals make the use of the electro-surgical knife appear very easy. It is so, after you have *mastered* the *technique*. It is absolutely foolish to expect that an intern is going to have the ability to use an electro-surgical knife whenever he pleases without the supervision of a superior.

In reference to the point that Dr. Loder spoke of, of using the electro-surgical knife supplanting the scalpel, I am a firm believer that in five years there will be very few surgeons using the scalpel. Why? Because the advantages of using an electro-surgical knife are so much superior;—as far as your asepsis is concerned and as far as the hemorrhage is concerned, except in the large vessels; naturally they must be tied. There has been a false impression that one can use the electro-surgical knife and not be obliged to tie any vessels. One must tie the large vessels supplying the breast, as a precaution.

In reference to the wounds which Dr. Whitaker just spoke about, the doctor who is using the electro-surgical knife must know how much power to exert. If he turns on a power control of 40 or 50, and when he is moving the knife along the scar or along the incision, if he hesitates too long, he is going to get a charring of that surface and then a sloughing of the tissue.

In a few of the cases, I have found a little serum in the stitches.

I just discharged a patient week before last where I did an entire resection of the internal saphenous vein on both legs. You might ask, "Why didn't you use the injection method?" I didn't dare to do so. I didn't feel safe enough with the injection method. We started at the femoral opening and proceeded to the internal malleolus of both legs. Mind you, here was a scar about two feet long, and there was just a little serum from one part of the wound. We didn't get any sloughing. Some sloughing would have occurred if we had charred the line of incision.

Using the electro-surgical knife is no boy's play. In the last few pages of my paper, I went into the technique but I didn't have time to read it.

If any of you gentlemen are anticipating using the electro-surgical knife, let me give you this warning: First, you will read Massey's work, next you will read George A. Wyeth's work, and last you will read and re-read E. P. Cumberbatch's work; then you will do some experimental work. Finally you will have the courage to use the electro-surgical knife on the human body, and when you are using it on the human body, you must remember you are using it to relieve or cure your patient of the disease or the trouble with which he is afflicted, and for which he has come to you for consultation.

CHAIRMAN MCFEE: Dr. Frederick W. O'Brien will present the Canti Film (microphotographic moving pictures of normal and abnormal cell division and the effects of radium on the same).

CANTI FILM

DR. FREDERICK W. O'BRIEN, Boston: This film was prepared in the laboratory of the Research Hospital for Cancer in Cambridge (England), part of the work was done there and part of it in St. Bartholomew's in London, prepared under the direction of Dr. Canti and Dr. Strangeways.

The first reel shows the normal cells of fowl periosteum, and also shows the non-radiated cells of Jensen's rat sarcoma; the second reel shows radiation of these cells; and the third reel shows dark field illumination of periosteal cells.

Quite as remarkable as what you will see on the film, I think, was the technique that was necessary to produce it. We will see here

in a matter of sixty seconds what photographically took twenty-seven hours to produce, and then the mechanical difficulties that were to be overcome seemed almost insuperable. I don't know whether any of you reflect upon what is necessary to do microphotography and especially where you are using the moving picture camera.

I want to call your attention to what had to be done to produce this film, because there are enough legends on the reels themselves to properly orient you as it goes along, but the microphotographic method, I thought might interest you.

The tissues were photographed by means of a cinematographic camera placed over a microscope. Various objectives, including one-twelfth inch oil emersion were employed. The microscope with a culture was kept in an incubator with a temperature of 38 degrees Centigrade. During microphotography, vibrations as far as possible must be kept from the apparatus. This applies especially to the objective and the object itself, as even minute relative movements between these will cause blurring on the picture. Accordingly in the ground beneath the floor of the laboratory, a mass of concrete was cast in which were embedded four vertical steel posts. These posts passed upward through holes in the floor without anywhere touching it. On the top of these posts was cast a slab of concrete, and resting on this slab were alternate layers of concrete and rubber sponge. The topmost layer was thick and carried four vertical steel tubes, one at each corner. Supported on these tubes was a horizontal board of teak. On this teak shelf was placed the cinematograph camera facing downwards, without its lens. The hole in the front of the camera was placed over a similar hole made in the middle of the teak shelf to allow the admission of light to the film.

The cinematograph camera used was a commercial camera of box form and taking 400 feet of standard film. It was fitted with very light reciprocating parts giving exceptionally smooth working.

On the topmost layer of concrete and beneath the camera was placed the incubator with the microscope inside. The microscope was a prewar microphotographic model by size. The incubator was electrically heated and constructed of lead four millimeters thick to protect the workings from irradiation. A glass window in the front of the incubator on the level of the mirror of the microscope admitted the beam of light from the illuminate. The illuminate was a hundred candle power tungsten arc in vacua.

It was arranged so that the lamp and condenser could be moved in a horizontal or vertical direction as one unit. The photographic exposures were made by means of a hand camera shutter, of the continuously set type which was automatically actuated. The illuminate and the shutter were placed on the table in front of the microscope but did not touch any part of the concrete platform supporting the microscope and camera.

In order to record time, the image of a watch was photographed onto one corner of the film each time a photograph was taken at different experiments, at intervals of 3, 10, 30, or 60 seconds, and the resulting pictures shown at the usual speed of 16 per second. This gives a speeding up effect of 50, 120, 480, and 960 times respectively.

The trigger mechanism which determined the taking of the photograph and the changing of the photographic film was provided by a suitably modified electric clock which could be arranged to deliver electric impulses at the required intervals.

The cultures photographed were prepared in the laboratories of the Research Hospital at Cambridge. They consisted of the periosteum of the chick embryo of six to eight days' incubation, and portions of the tumors of Jensen's rat sarcoma.

The cultures were either incubated from the beginning on the stage of the microscope, or were incubated in the ordinary biological incubator and transferred to the microscope according to the nature of the picture being taken. In any case, it all was kept at incubator temperature during the period of the photographing.

The legends on the reels now I think will carry you on.

(The Canti Film was then shown.)

CHAIRMAN MCFEE: The next number on the program is Industrial Physiotherapy. We were fortunate in getting one who is well qualified by contact and experience to present this subject. The speaker holds the position of medical advisor to the Aetna Insurance Company. Dr. Charles Hutchins, of Syracuse.

INDUSTRIAL PHYSIOTHERAPY

DR. C. P. HUTCHINS, Aetna Life Insurance Company, Syracuse, N. Y.: *Mr. Chairman, Ladies and Gentlemen*—The pleasure that I have in coming to Boston on this occasion is tinged with sadness for me in that it is my first visit here since the passing of my very good friend, that magnificent exponent of physiotherapy, Dr. Granger.

In the brief time that is allotted, and with the eighteen minutes required in showing a single reel, we have very little opportunity to adequately discuss the broad subject of the application of physiotherapeutics to industrial accidents; if I may confine myself to that.

It is my purpose, because of restricted time, to eliminate all questions that are purely administrative, that is, the question as to how in-

dustrial accidents must be administered, and confine myself purely to the therapeutic side.

It became apparent to those of us who were fortunate enough to find our lives cast in the reclamation of the maimed in the war that the facilities that were given to us—and we had the opportunity to study with controls in a vast number of cases—would be of equal service in the results of industrial accidents. True, there is a decided difference in the amount of damage and the character of the damage wrought by missiles, and the misfortune of industrial life. At the same time it is a question of degree in the main. Much of the pathology is fairly identical. So when circumstance brought that experience of the war into contact with industry, it became necessary to canvass the general situation as to what was available. And there was little that was available ten years ago. When the reconstruction period in the war began, we in this country knew little or nothing about the application of physiotherapeutics to the results of injury. The fact of the matter is, when we were assigned to that work in government hospitals, the government had little or nothing to give us in the way of information to start us out. So it was not surprising that industry really only sampled it. Time has wrought considerable change in that respect in ten years, and something is being codified. We have even reached the time when the American College of Surgeons has changed its attitude from the report of the Committee on Traumatic Surgery delivered in Montreal to the recent letter of Dr. Martin; if you compare those two documents, you will see the actual notation of growth of physiotherapy in its recognition by that body.

When a man receives an accident in industry, he may be somewhere near a medical center like Boston, or Philadelphia, or New York, where all the facilities are available for the finest expression of surgery; and then again he may not. All accidental injury and all industry do not develop in the centers of human activity. Much of it is on the frontier. Lumbering projects with their extreme hazards wreck havoc among laborers; paper making and many manufactures are far apart from cities and near the great water power sources; therefore, much of the initial surgery is indifferent, if not bad. All of which means that the less intelligent and the less fine the original treatment, the greater the necessity for the subsequent physiotherapy adaptation.

I said in Boston some years ago that the physiotherapist had an opportunity to be the auditor of surgical results. I mean that; and that auditorship isn't always pleasant. I don't think we can go so far as the one-time chief surgeon of the Reconstruction Hospital in New York City,—I can't think of his name right now, —who said if surgery was adequate there would be no necessity for physiotherapy. At the same time there is a certain relationship between proper anatomical reposition and physiological rest, and the ultimate need of physiotherapy, even though we do not get into the question of infection.

Seven years ago the Aetna Life Insurance Company was persuaded to start an experimental work in this field. That now covers a range of a thousand cases in round numbers. In a measure it has been financially successful In the main, the object has been to simply meet the necessary cost, if possible, and demonstrate what might be worked out for the unfortunate man; for, in a great many cases we find that when anatomical repair has been completed in accordance with the nature of the damage and the skill of the surgeon, and the patient is told that everything has been done that can be done for him and now he must go ahead and use it, he is quite inclined to look at that damaged hand, if such it be, and say, "I couldn't keep it out of trouble when it was all right, and what am I going to do with it now?" We find that the artisan does not consider that machine again with the same confidence as before. So when we approach him on the question of attempting to do something more in functional restoration than anatomical repair, and the surgeon has finished his task, it is with something of an attitude of incredulity that the patient responds to our appeal.

While there are some cases that are stubborn and do not yield much in the way of a return, the great mass does. The accomplishment is very easy to measure if one depends on something besides actual guesswork. In range of joint action, the only accurate calculation must be based on actual measurement of range of joint action by use of some sort of a device registering in degrees, and perhaps with the use of the lead tape to take the actual line, spreading that on the proper tractor for determination. So, one can keep actual track without any of this hit-and-miss estimation of "Oh, this man has 25 or 30 per cent. of loss of the use of a hand or finger."

Four or five years ago it occurred to me that some of the claims that were made of accomplishment in different cases might be challenged, and without waiting for the company to buy a motion picture machine, I secured one and started to take some of these photographs of limitation of motion at the time the patient was admitted, intending to again take them at the time of discharge, keeping record of exactly what had transpired in the interval. The company later reimbursed me for that, and we have taken quite a number. Some of them do not show very much.

We have tried to make it perfectly plain that physiotherapy isn't a panacea any more than it is a dump for cases the surgeon wishes to get rid of. In other words, it serves a certain, specific purpose in the way of assistance. Many

times it is necessary to call for secondary surgery before there is any reasonable attempt to be made in physiotherapy. I do not know the figures offhand now, but certainly one out of fifteen that comes to us requires some sort of secondary surgery. I recall an instance not long ago from Binghamton. A man having had an amputation of a finger was sent to us for physiotherapy. The stump looked a little bit suspicious. We, who have learned not to take anybody's word on roentgenological findings, had another film and found a focus, which was strongly suspicious of osteomyelitic involvement. We returned him to the initial surgeon with the film and suggested that it was not quite time for physiotherapy. I think that should be the spirit of the relation between the surgeon and physiotherapist always, not in the way of criticism, but at the same time, not to attempt in physiotherapy something that is properly surgical.

(Dr. Hutchins then showed moving pictures.)

CHAIRMAN MCFEE: I am going to ask those discussing this paper to please limit themselves to a two-minute period.

I will ask Dr. Arthur Brown to start the discussion.

DISCUSSION

DR. ARTHUR L. BROWN, Winchester: Dr. Hutchins has a master mind by which he has improvised methods and means enabling him to produce the results which he has demonstrated here by his screen. I can add practically nothing to his extensive and rich experience, other than this: I do believe that he emphasized two factors which may stand repetition, one of which is that you cannot accomplish everything to be desired in the department of physiotherapy alone. You will oftentimes hear people say, "Well, why can't we standardize our treatments to this modality or that modality, or what not?"

Physiotherapy is just simply the supplementary resource of our limitations in medicine and surgery, and, therefore, I believe it is the medium that is to weld together the specific departments. I don't care what your specialty is, it is the one thing that will give you the opportunity to offer to your patient something more when you have reached a definite limitation.

CHAIRMAN MCFEE: The subject is now open for general discussion. Has anyone present anything to offer in discussion on the paper?

DR. M. A. COHEN, Boston: I have not much more to add with respect to Dr. Hutchins' paper, except in reference to the simple traumatic cases, where if we have a physiotherapy department to begin with, there is so much more chance of reducing the period of disability as well as preventing the complications which may arise. We know very well that the reason we have limitation of motion, disability and pain, is because the end products of inflammation accumulate at the site of injury.

In our armamentarium of physiotherapy, there are many modalities that will take away that exudate or inflammation at the time of treatment, or soon thereafter. Application of heat soon enough to produce relaxation followed by modalities like static sparks, static Morton wave or sine current will aid in carrying off this exudate in the circulation and thereby reduce the amount of swelling which produces pain and spasm which prevents motion. These modalities during early stages of injury can prevent the contraction and atrophy that often follow the simple cases of trauma.

CHAIRMAN MCFEE: Is there any further discussion? If not, I will ask Dr. Hutchins to close.

DR. C. P. HUTCHINS: There isn't much to say in closing. Dr. Cohen is correct. The ideal thing would be, of course, to have these physiotherapy modalities available in the hospital service and to have a correlation of services which would make them available immediately. In that way much of what I have shown you here could be avoided. This is simply to show the problems that come to us from hither and yon because of the circumstance, that comparatively little experience in post-surgical physiotherapy exists outside of centers such as Boston. If you could have consultation between the physiotherapist and orthopedist immediately, you would have the maximum effect and the curtailment of disability period and percentage of loss of use.

I think that is all.

CHAIRMAN MCFEE: The next number will be "Indications for Surgical Treatment in Ulcer of the Stomach and Duodenum." The work of the man presenting this subject is so well known that he needs no words of introduction. We are pleased to have as our guest Dr. Lewis Gregory Cole, of New York.

His paper was published in the Section of Medicine, page 1081 issue of November 28 and therefore is not repeated here.

CHAIRMAN MCFEE: Discussion of this interesting subject so ably presented by Dr. Cole will be opened by Drs. Chester Jones, of the Massachusetts General Hospital, and I. J. Walker, of the Boston City Hospital.

DISCUSSION

DR. CHESTER JONES, Boston: I think that Dr. Cole's presentation has been a very admirable one because he has purposely omitted several points of dispute. It seems to me that his presentation has fundamentally been one of a temporary treatment, leaving out any discussion as to what may have happened subsequently.

About fifteen or eighteen years ago we first began to talk about surgical treatment of duodenal ulcer, or peptic ulcer. We went through

a phase of surgery. During the past fifteen years we have seen the surgical treatment of peptic ulcer, at first rather broadly employed, later becoming more and more limited, until at present there is no question that as far as the ulcers that Dr. Cole has omitted from his discussion are concerned, much has been taken out of the surgical field at least for a temporary period.

Recently we have seen a return of surgery from the point of view of gastric resections for the type of ulcers that Dr. Cole has mentioned and there have been advocates both in Europe and in this country for such rather radical treatment.

It seems to me that one conclusion we can certainly draw from Dr. Cole's pictures and from the histories in which he has told us of these cases, is that conservative treatment followed over a reasonable length of time is a very proper thing to do. I have been interested in the treatment of ulcer and followed along with one of the surgeons a good part of the peptic ulcers at the Massachusetts General for the past few years, and we have found without any question that it pays to be conservative.

With regard to the ulcers that Dr. Cole has mentioned, which he calls corporal ulcers, there is also no question that if they are followed carefully by one of several methods of medical treatment, evidence of the ulcer will disappear, the patient will be symptom-free and can be discharged from the hospital in perfectly sound condition.

I remember one patient that gave me a story of fifty years of typical ulcer history. He was seen by one or two excellent X-ray men in this city on several occasions in the past seven years and each time an ulcer such as Dr. Cole has described was demonstrated. Finally he consented to come into our hospital for treatment. He didn't wish surgery. Under medical treatment the evidence of ulcer did disappear and he was symptom-free. That, I should say, was a rather extreme case of this type of patient, but it seems to me that as far as medical treatment is concerned, many of these patients will be willing to be treated provided they are under close observation. I think it makes a difference whether the patient presents himself, for instance, in the out-patient department and this type of X-ray finding is made, and he then consents to come into the hospital to be treated, or whether he has got to be treated as an ambulatory patient. I think many of us would feel that the risk was altogether too great in such cases for ambulatory treatment.

One thing that Dr. Cole didn't mention, that I think may come into the discussion, is the incidence of cancer in these cases. The question of cancer incidence in this type of ulcer of the stomach is a very much disputed point. Statistics are given claiming as high as 49 or 50 per cent., or higher.

DR. COLE: Eighty-six, to be accurate.

DR. JONES: I was taking some of the more moderate figures. Then I will say as high as 80 per cent., or over. Other statistics have suggested that around 5 per cent., or possibly less, is the proper incidence for cancer on ulcer. With such a wide variation it seems as if we could afford to be conservative, provided we can observe these cases carefully.

I am not sure that I would be willing to take the risk of not considering surgery in some of these cases (with a very large crater) that Dr. Cole has presented to us. I may be wrong, and that may be due largely to my own lack of experience in these cases. I am sure that the small lesions can be treated medically successfully without any danger to the patient, and all they need is careful observation.

I think that Dr. Cole has shown us a definite group of ulcers over which we have been too enthusiastic about immediate surgery. Immediate surgery is rarely necessary in these cases. It is also true that in cases of this type that have been recently operated on and a resection performed, we have seen an ulcer reformed higher up; so that certainly resection does not promise a complete cure of this condition any more than does a V resection.

While I wish to qualify my opinion about some of the very large crater ulcers because of lack of experience in this group, it seems to me the point Dr. Cole has made of the necessity and the wisdom of very conservative treatment for a reasonable length of time—and by reasonable I agree with Dr. Cole, that that means weeks of observation—is perfectly advisable.

The mortality is high in these radical operations. At times they are absolutely essential, but it seems to me they should only be performed after very serious consideration.

CHAIRMAN MCFEE: The time allotted to this Section for the use of the room has expired, so I will ask Dr. I. J. Walker, of Boston, to close the discussion.

DR. I. J. WALKER, Boston: I will try to be just as brief as I possibly can, although this is a very large subject.

First of all, the fact, I think, that we are still discussing gastric and duodenal ulcers, both from the surgical and medical aspect makes me feel that perhaps as yet we have not discovered the true etiological factor of ulcer. I think Dr. Cole's paper in the Medical Section this morning was very timely, and perhaps may answer the situation as regards the etiology of ulcer in general.

The surgeon seems to be on the defense right along these days in regard to the treatment of ulcer. First, as to corpus ulcers—I would rather term these gastric ulcers—since you all would perhaps better understand me.

DR. COLE: If it is proximal to the sphincter,

you are going to call them all gastric. How are you going to distinguish these from those down at the other end?

DR. WALKER: I will call any ulcer from the esophagus down to the so-called beginning of the duodenum gastric, and those in the duodenum, duodenal ulcers.

Why have surgeons been so enthusiastic as regards their treatment of these gastric ulcers in the past? I think it narrows down to this: that until very recent years, the surgeon has known that carcinoma, as well as ulcer, existed in the stomach. He could not differentiate accurately ulcer and carcinoma. He was afraid of the possibility of carcinoma. On the other hand, he was not afraid of duodenal ulcer. He knew duodenal carcinoma existed very, very rarely. Therefore, he was afraid of the ulcer on the gastric side lest it be carcinoma. Even the x-ray men were a little hazy in differentiating gastric ulcer and carcinoma until within recent years. I know that from my own experience. Sometimes they would not commit themselves. That put the surgeon in the position of proving, or not, whether the lesion was an ulcer, and, therefore, he resorted to surgery and to be safe resected the lesion. Thanks to laboratory methods; thanks, I think, perhaps, most of all, to improved technique and interpretation in x-ray work, we have been better able to diagnose ulcer in differentiation from that of carcinoma of the stomach.

Today I think the surgeon well agrees that he will be more conservative in gastric surgery—I am speaking of gastric not duodenal now—in the future.

I feel that the possibility of carcinoma occurring on ulcer has perhaps been exaggerated. Honestly so, perhaps, but exaggerated nevertheless. I feel that probably the possibility of the occurrence of carcinoma upon ulcer is far less to be feared than the mortality attending operation of gastric resection for ulcer, which may possibly be carcinoma. Therefore, I feel that the surgeon will in the future probably be more conservative as regards his surgery for gastric ulcer in general. I think we will be conservative because we have been shown we should be, chiefly by improved methods of technique in the diagnosis of these lesions of the stomach.

Just one factor in duodenal ulcer, and that is this: We all agree that an obstructing ulcer of the duodenum is surgical from the start. As to the chronic duodenal ulcer, not obstructing, we all start out with medical treatment, or should, I believe. However, I see cases coming back to me who have been treated fairly and very well from the medical standpoint, who still have their ulcer symptoms.

I will say this: if a man with duodenal ulcer enters into medical treatment, let him enter into it with the understanding that it must be most thorough and must be prolonged. It is not a matter of days or weeks; it is a matter of a longer period of time; it is a matter of a year or a year and a half. I am sure of that. If a man enters into it with the knowledge that he may be cured, but then again he may not be, well and good, that is fine, but there are certain classes that I am sure cannot or will not accept proper medical treatment and all that goes with it:—because of indifference or fear of losing his position, lack of sufficient finance, etc., he may not follow medical treatment as he should.

I think some of those cases that we see in these large general hospitals had better elect surgery from the start. After all, gastro-enterostomy is not such a bad operation. If it has been criticized and discredited, it has been because it has been done on some cases in years gone by where ulcer did not exist. I am sure this is one of the factors for discrediting gastro-enterostomy. Still it is a good operation and if a man fails on medical treatment or cannot accept proper medical treatment, then let him have a gastro-enterostomy.

DR. FRANKLIN W. WHITE, Boston: I agree with Dr. Cole in his remarks about the appearance and change in these ulcers of the body of the stomach after medical treatment. I have just presented a paper in the Medical Section showing the same things which Dr. Cole has found; namely, that ulcers in the body of the stomach, even large ones, often heal within four to six weeks, and my experience has been like Dr. Cole's, that when these ulcers have gone away, they have almost invariably stayed away.

I am sure you have all been struck by the large size of some of these gastric ulcers which have been put under medical treatment. A good deal of material has come out of the Mayo Clinic showing that malignant degeneration is especially likely to occur in the larger ulcers, but it is evident that there must be many large ulcers which have no malignant degeneration or they would not disappear so rapidly within four to six weeks under medical treatment. Some of our largest ulcers in persons about 60 have done as well as smaller ones in younger persons.

I am strongly inclined to try medical treatment first in cases diagnosed as ulcer regardless of size, if cancer can be ruled out at the start by the initial examination and by very careful observation of the early results of medical treatment.

CHAIRMAN MCFEE: The meeting of the Council has been adjourned to the Ball Room.

The meeting of the Section of Radiology and Physiotherapy adjourned at twelve-twenty o'clock.

The following officers were elected to serve for the ensuing year in the Section of Radiology and Physiotherapy:

Chairman—Dr. Patrick F. Butler, Boston.

Secretary—Dr. Arthur H. Ring, Arlington Heights.

THE GRADUATE COURSE IN CANCER

FOREWORD

THE following papers, presented during the Graduate Course in Cancer, should be regarded as representative rather than as in any sense complete. Efforts were made through commercial stenographers, the staff of the Department of Public Health and the various hospitals to have each of the clinics in the course covered. This was only partially successful because of the very great difficulty of obtaining competent medical stenographers. Furthermore many of the talks were so purely clinical, so richly supported by demonstration of cases or lantern slides to which they formed a running commentary, that they are almost impossible to reproduce in printed form. For these reasons the papers printed do not purport to reproduce the full course, and it may appear that injustice is done to many who made very valuable contributions toward the success of the course. However, under the circumstances the Committee has no choice other than to present the material in this incomplete form or to omit it altogether. Because of repeated requests for this material we have decided on the former course. Some modifications have been necessary in editing the papers actually presented, chiefly in the omission of comments on illustrative cases, of questions and answers, and in changes from the forceful direct word of mouth presentation to the more leisurely tempo of print.

We are indebted to Dr. Grantley W. Taylor for the onerous task of editorship.

FRANKLIN G. BALCH,
GEORGE H. BIGELOW,
ROBERT B. GREENOUGH,
*for the Committee.**

*EXECUTIVE COMMITTEE IN CHARGE OF THE GRADUATE COURSE IN CANCER

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Dr. Franklin G. Balch, 279 Clarendon Street, Boston.
Dr. Alexander Begg, 80 East Concord Street, Boston.
Dr. George H. Bigelow, Room 546, State House, Boston.
Dr. J. M. Birnie, 14 Chestnut Street, Springfield, Mass.
Dr. Walter P. Bowers, 165 Newbury Street, Boston.
Dr. Walter Burrage, 182 Walnut Street, Boston.
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Dr. George A. Leland, 144 Commonwealth Avenue, Boston.
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Dr. Frank R. Ober, 234 Marlborough Street, Boston.
Dr. Stephen Rushmore, 520 Commonwealth Avenue, Boston.
Dr. William M. Sheddon, 270 Commonwealth Avenue, Boston.
Dr. Channing C. Simmons, 295 Beacon Street, Boston.
Dr. Irving J. Walker, 520 Commonwealth Avenue, Boston.
Dr. Shields Warren, Palmer Memorial Hospital, Boston.

ADDRESS BY HIS EXCELLENCY, FRANK G. ALLEN, GOVERNOR OF THE COMMONWEALTH OF MASSACHUSETTS*

IT is a real pleasure to greet the four professional groups on whom Massachusetts must depend for success in the war which has been declared against cancer. I understand that this is the first day of a brief course which the State Medical Society has arranged as a review of the present knowledge in regard to the early recognition and the adequate treatment of the disease. This first day the dentists of the State have been invited to meet with the physicians in studying that particular field in which they may contribute. Then, to this dinner have been invited nurses and social workers who contribute so materially to the adequacy of the service and its proper utilization. Indeed this is a meeting fraught with great significance for the future public good.

It is now almost three years since the Commonwealth inaugurated an intensive cancer program. Our Pondville Hospital gives splendid service to persons in all stages of the disease. For almost a year there has been a waiting list for admission to its ninety beds. In my message to the Legislature I recommended, besides other matters of importance to the public health, an addition of twenty-five beds to this hospital. But of even more importance, as I pointed out, is the adequate quarters that will be furnished in the addition for the clinic. This service has grown out of all proportion to anything that was anticipated and is a great tribute particularly to the devotion of the visiting staff. Here the hospital is making its real contribution toward the prevention of the shockingly unnecessary cancer deaths, since it is in the clinic and not the hospital bed that curable cancer is found.

But the benefits of clinic service in this field are not limited to those able to reach our State Hospital. Besides those cancer clinics developed purely under private initiative, many of them of long standing, particularly in Boston, the local medical profession has co-operated with the Department of Public Health in opening clinics in sixteen other cities and towns widespread over the Commonwealth. In these clinics 2500 of our citizens were served last year. But this is only a small part of the service. Studies have shown that of the people seeking advice 90 per cent. go to the private offices of physicians. A year ago there was an intensive campaign to educate people to seek this advice early. Now you are devoting yourselves to the great task of making this entire service more completely adequate. Indeed we are fortunate that in the Commonwealth we have one of the great medical centers of the world with hospitals so truly de-

*Delivered at the Hotel Somerset during the week of the Graduate Course in Cancer, 1929.

voted to the public weal. Otherwise, these meetings of yours would be impossible.

But I must point out that cancer is only one of the many causes of devastating sickness among our citizens of advancing years. With the average age of our people steadily increasing, the next decade is going to see the problem of chronic sickness bearing on us with increasing weight. The growing cost of hospitals, both private and public, the problem of care of the aged, the unrest in regard to the general cost and adequacy of service for the sick—these are all evidences of the same phenomenon. The chronic sick must have adequate care. But far more important is the keen realization that perhaps the economic security of the State itself depends upon the appreciation by those professions here represented and by the general public of the vastly greater importance of the fullest utilization of every resource for the prevention of chronic sickness. Who knows but that in your endeavor to extend complete service for cancer you may be blazing a trail which will show also the way to solve the enigma of all chronic disease. For the devotion of all of you to this task in the office, the clinic and the field, I salute you!

CARCINOMA OF THE MOUTH AND LIP*

GEORGE A. LELAND, M.D.†

OF course, everyone here realizes that we do not know the cause of cancer. Everybody here realizes that chronic irritation plays an important part. There is probably no place in the body where chronic irritation is a more important factor than in cancer of the mouth. Our knowledge of the cure of cancer is limited to a certain extent by difficulties in early recognition of cancer, but we all agree that the way to head off cancer is to remove any foci that may predispose to cancer. There are very few people who do not pay attention to their mouths when there is something wrong there, as the interference of the function of the mouth interferes with eating and a sore tongue or an irritated spot is oftentimes noted by the patient and he goes to his physician. Likewise, irregularities of the teeth are looked after by patients relatively earlier than difficulties of the gastro-intestinal tract, such as constipation, slight indigestion, etc. In the mouth region, therefore, the possibilities of detecting pre-cancerous lesions are a great deal better than in any other part of the body, and if they are attended to, the relative mortality from cancer of the mouth will be correspondingly diminished. This subject of cancer of the mouth is very important from the point of view of prophylaxis.

As to the etiology, in a series of cases we find the larger proportion, 65-75%, show a definite chronic irritation which has been present for a considerable length of time. For instance, irregular teeth; teeth that have lost their fillings; individuals with ill-fitting plates which cause irritation. Most people bite their tongues and sooner or later, if it is repeated, little benign tumors result which, of course, may present a focus of chronic irritation. A large proportion of all individuals with carcinoma of the mouth are users of tobacco. In this connection leukoplakia is a signal and a warning against the possibility of later carcinoma. Dr. Bloodgood says that leukoplakia of the mouth does not exist save in connection with the use of tobacco. There are evidently some exceptions to that broad statement but it is a pretty good point to remember. If leukoplakia exists, cutting down on the use of tobacco helps curb the condition. It may not be a pre-cancerous condition but plus some other difficulty or some irritation of the mouth, it is very prone to be pre-cancerous.

Another factor is syphilis. In various groups syphilis is a factor varying from 14-45%. Bloodgood's figures note an incidence of syphilis in about 20% and Simmons, of the Huntington Hospital, reports around 14%. It is certainly a factor and Bloodgood further states that when syphilis and extensive use of tobacco and irritation in the mouth exist carcinoma is practically certain to arise. While we are speaking of syphilis, I would like to mention something with reference to the diagnosis and treatment. The fact that syphilitic lesions are prone to occur in the mouth is known by everybody, but when an individual presents an indurated ulceration where there is a suspicion of syphilis, one should not bring up the syphilitic question from the point of view of how to treat the patient, but bring it up as an etiological factor in cancer formation. It is not incompatible to have syphilis and cancer in the same lesion. Frequently syphilis and cancer do co-exist in the mouth. It is poor therapy to attempt to cure such a lesion by antisyphilitic measures alone, merely because the Wassermann reaction is positive. You might get rid of the syphilis but not of the cancer.

I should like to say a few words about the pathology of cancer of the mouth. Clinically, there are two distinct types; the hard, indurated,

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ulcerated lesion and the somewhat softer, though firm, papillary lesion. We distinguish these two types by bearing in mind that the hard, indurated lesion is more malignant and rapidly growing than the papillary type. The location of disease varies with these two types. The less malignant growth occurs on the cheek, the upper jaw, and the palate; the more malignant, hard, ulcerating lesion on the tongue and the floor of the mouth and to some extent on the lower jaw. The location of the lesion in the mouth is important. Of course, in the past, we have been in the habit of speaking of carcinoma of the tongue, jaw, inside of the cheek, etc. but we really should look upon them as being in the same family. They all start as cancer of the mucous membrane. We should speak of them as cancer of the buccal mucosa or buccal mucous membrane, and then describe the origin. The papillary type is less malignant from the clinical point of view as noted not alone by the rapidity of the local growth but also with reference to the rapidity of the metastases to the regional lymph-nodes. In this question of metastases to the regional lymph-nodes, we want to emphasize that cancer of the mouth metastasizes very rapidly as a group, in contra-distinction to cancer of the uterus, the colon, the breast, etc. Metastasis is very early in buccal mucosa lesions, one to two months or even less. A cancer of the mouth is an old and advanced case after two months have elapsed from its start. In cancer of the buccal mucous membrane, we must bear in mind the possibility of multiple foci. We usually think that multiple lesions are more consistent with some other diagnosis such as tuberculosis or syphilis, but in cancer of the mouth it is possible to have a lesion in the lip and also a lesion inside the cheek as well as the possibility of two lesions of the lip. We must also bear in mind, regarding the pathology, that although cancers may recur in a local situation in which they originated and were removed from, that cancers may also develop in other parts of the mouth not at the original focus. These cancers in distinction to recurrent cancers have been called re-occurrence. Cancer may occur in one cheek and a year later occur on the other side. Cancer of the lip may be removed from one side and later may appear on the other side. It cannot be called metastasis but is merely an evidence that the patient has a tendency to cancer formation.

Symptoms: There is no typical early symptom. Cancer is apt to develop in the mouth just as it does anywhere else in the body. There are a certain number of cells that develop atypically and gradually form a tumor, and this tumor is present as the first evidence. This tumor which may not be a cancer at the start, should be attended to by prompt action. If attended to immediately by a simple local operation, i.e. local anesthesia, operation with excision and a few sutures, that is all that is necessary. Of course, the buccal mucosa heals wonderfully. There is no portion of the body that heals better or more quickly. It gives the least amount of disability to the patient. If the lesions are removed before they become ulcerated, it is a very simple procedure for the patient. When they become ulcerated, even before carcinoma develops, the process of healing is only a little more prolonged.

In the differential diagnosis of cancer of the buccal mucosa, we have already spoken about syphilis. If you find a hard, indurated ulcer and suspect syphilis, it is all right to suspect it but treat the lesion as cancer, as the two probably co-exist. The other two ulcerative conditions that may be confused with cancer are tuberculosis and so-called simple ulcer. Tuberculous ulcers are usually quite painful. They very rarely occur without some history of tuberculosis somewhere else in the body and although they are painful, they look much more benign and less angry than a malignant ulcer. The individual complains of more pain and has less to show for it than an individual with a malignant ulcer. The malignant ulcer is an ulcerative growth which looks very sore and sensitive and there is relatively little pain. Of course, biopsy is indicated and a tuberculous ulcer is not at all badly treated by excision. You can get rid of tuberculous ulcers very easily that way. A simple ulcer is about the hardest thing to differentiate from carcinoma. Simple ulcers may occur from irregularities of the teeth or irregularities of ill-fitting plates. A simple ulcer is a lesion which may develop into a malignant lesion and, therefore, the treatment should be the same. The aspects are very similar to those of cancer.

I would like to make a few remarks about the treatment of buccal cancer. The treatment in general can come under two headings: (1) Local Treatment. (2) Treatment of the Regional Lymph-Nodes. I say regional lymph nodes because carcinoma of the buccal mucosa does not often spread except to lymph-nodes at adjacent points. Sometimes however, it does. We sometimes have metastases to the brain. Occasionally we have metastases to the mediastinum, or axilla, but these cases are very rare. Usually metastases go directly to the neck. The general question of treatment can be summed up in the words—completely destroy the local lesion. That is, destroy it when you can. In advanced cases you may not be able to destroy it because such a procedure may be too severe for the patient. But this is the general principle. It does not make much difference how you destroy it as long as you do destroy it. Excision may be done but it must be thorough. The lesion may be cauterized, but make sure the cautery is thorough and does destroy it. Radium may be used. This may be done by implantation of seeds or needles, but here again be very sure to give a large enough dose to destroy the lesion completely. These, then, are the three ways of

treating carcinoma of the mouth in general. There are relative advantages and disadvantages to all the methods. *Surgical excision* is, of course, attended with the problem of complete hemostasis in a field that is very vascular. It is not impossible to treat these lesions by surgical excision but we must bear in mind the possibility of hemorrhage, the patient losing much blood very quickly down the throat. This is the one draw-back to surgery—hemorrhage. Now take *cauterization.* Prior to the method of electro-coagulation now used, cauterization had to be done by means of a hot cautery which meant that in each case where the cautery was used, it was actually heated, with the result that first or second degree burns followed close to the areas that were being cauterized. This, of course, meant great discomfort for the patient. When using cauterization by means of the hot cautery, the depth of the cauterization could not always be accurately determined. There was the possibility of hemorrhage, at the time of use of this cautery or subsequently from sloughing. The new electro-coagulating device, endothermy so-called, is now in use. Here the heat is developed in the tissue and not in the instrument. With this method surgery inside the mouth has been made vastly easier of accomplishment from the point of view of the surgeon and a great deal more efficient and less painful for the patient. *Radium treatment:* Radium is, of course, an intensively destructive agent of carcinoma and it will destroy carcinomata of the mouth. However, we must go back to the original statement which says that you must use enough radium to destroy the carcinoma. As you know, the whole mouth is very sensitive and if you have a lesion of a considerable size, you must use a considerable amount of radium and the result is that the mouth gets a tremendous amount of reaction with a great deal of pain and sometimes this pain lasts for weeks. When you get a painful condition of the mouth, the individual's nutrition suffers. He is unable to swallow or take in nourishment and the result is that he is uncomfortable, cannot sleep or rest properly, and he is a very miserable patient. If you have a curable case, it is possibly worth putting the patient through all this misery, but if it is only a palliative case, such a heroic method is not indicated.

The question of treating the regional lymph-nodes next comes to our attention. There is only one way to treat carcinoma of the regional lymph-nodes no matter in what part of the body it originates and that is by getting rid of the lymph-nodes. All forms of external radiation, no matter how heavy, will not positively kill all the carcinoma of the lymph-nodes. The general effect is one of increasing the fibrous capsule around the lymph-node and keeping it within bounds for a certain length of time but it does not permanently rid the patient of the carcinoma. Where there is only a small amount of carcinoma, this treatment will keep it in abeyance for a long time but the permanent effectiveness of this treatment cannot be found in any part of the body. There are other methods of treating carcinoma of the lymph-nodes. One of these is by laying open the lymphatic areas and a portion of the diseased areas and introducing radium seeds into the tissue. This is a procedure which we think has its defects. We rather feel that if you are going to lay open the lymphatic area, it is better to remove the lymph-nodes rather than implant the radium seeds. Our two main premises are the destruction of the local lesions and the removal of the lymphatic glands.

Carcinoma of the mouth may well be put under six headings. (1) Pre-cancerous lesions. These lend themselves to excision by the scalpel for small, non-ulcerated lesions, or with the electro-coagulating current for lesions which are ulcerated or large. (2) Very early carcinoma of the buccal mucosa; so early that clinically we do not know whether it is pre-cancerous or cancerous. This type of lesion should be excised, and from here on by excision we mean with the electro-coagulating current, or knife. The question arises here, shall we or shall we not dissect the lymph-nodes in early carcinoma? The question of dissecting all lymph-nodes is determined by the relative malignancy from the pathological point of view. In some cases, yes, and in others, no. (3) When we have carcinoma and palpable lymph-nodes, we should dissect the lymph-nodes. (4) When the lymph-nodes are grossly involved; that is, when they are hard, and nodular, it is too late to dissect them. From the patient's point of view the local lesion may be destroyed but it is too late to remove the lymph-nodes as a cure. When they are fixed in the neck, they cannot be cured by excision. In these cases, a palliative procedure is indicated such as keeping the patient comfortable with x-ray treatment. (5) In carcinoma of the mouth which is too large to warrant excision or destruction, we have to palliate by some form of radium. We expect that this procedure will heal over the ulcerative surface without any hope of its destroying the whole lesion. This method is carried out best by radium seeds being buried, or radium placed against the surface. The neck is treated by means of x-ray. (6) The same procedure is used for post-operative recurrences.

Carcinoma of the lip: The etiological factors that we have mentioned in general, in carcinoma of the mouth likewise apply to carcinoma of the lip, but in carcinoma of the lip, we are talking about carcinoma that is relatively less malignant. We all know of cases of carcinoma of the lip that are cured by simple local destruction of the lesion by the "V" shaped incision. In some of these cases it has recurred in the neck. In no part of the body, perhaps, is the relative degree of malignancy determined with more satisfactory clin-

ical application than in carcinoma of the lip. Quoting Dr. Shedden, Dr. Simmons, and Dr. Daland, in papers presented by them covering 200 or 300 cases of carcinoma of the lip, I want to call your attention to these rather pertinent facts. In the less malignant carcinomata of the lip, we do not find any metastases to the lymph-nodes. This is the type of case that does not recur following simple excision. In the more malignant types of carcinomata of the lip, where we find from 35-75% of the cases, they do metastasize to the lymph-nodes. These are of the types that do not do well after a simple excision. There are just two other sets of figures: Of the lymph-nodes that were removed in this group of cases, there were 68% that were palpable before operation and 32% that were not palpable before, but were removed as a routine procedure. Of the palpable nodes, 1/5 or 20% had carcinoma and of the non-palpable nodes 1/10 or 10% had carcinoma. Therefore, just because you cannot feel lymph-nodes in the neck before you operate it does not mean there is no carcinoma present in the neck. You must not rely on the clinical findings as to whether you should remove the lymph-nodes but on the relative malignancy of the original lesion. The figures further state that the most malignant group had a mortality of 69% in three years' time and the least malignant had a mortality of 1% in three years' time. That brings home the vast importance of knowing the relative malignancy of the lesions. The cases that actually had carcinoma of the lip and carcinoma of the lymph-nodes, however, were not always fatal, because 42% were well at the end of three years' time.

When we come to correlate these figures, we must bear in mind not so much the question of whether the lesion of the lip is large or small, or whether or not we can feel lymph-nodes in the neck, but we must bear in mind what the local lesion of the lip shows under the microscope with reference to the future of the patient and to the immediate care of the patient.

THE RESPONSIBILITY OF THE DENTIST IN CANCER OF THE MOUTH*

FRANCIS P. MC CARTHY, M.D.†

THE dentists are the men on whom the responsibility falls for the recognition and early diagnosis of cancer in the mouth. The medical man, frequently, does not examine the mouth as a part of his physical examination. He does look at the tonsils and focuses his attention on them. The dental man has been negligent in the past in the examination of the mouth as a whole and has focused his attention on the teeth, but I have always felt that dentists would get considerable more interest out of their work if they became expert diagnosticians of all lesions in the mouth or related to the mouth. If the dentist becomes an expert diagnostician in these conditions, he becomes more valuable to the public at large and places himself on a higher scale; and incidentally, in cancer of the mouth he will definitely make the diagnosis more often, while the lesion is still in a favorable stage for cure.

Cancer of the mouth usually occurs in men between forty and sixty years of age and about 75% occur in persons who are constant smokers, and in their mouths you will usually find evidences of bad dental hygiene and bad teeth. You will also find in the vast majority of these cases that these men are negligent of themselves and consult medical attention at a time when the malignant condition has gone beyond the operative stage. In most cases there is excessive use of tobacco and there are conditions in the mouth which serve to produce chronic irritation. Here is the place where the dentist fits into the picture. The ill-fitting denture and sharp teeth are the factors which precipitate the irritation, the predisposing causes being, the use of tobacco, and syphilis, in a considerable percentage of cases.

The most common condition in the mouth which predisposes to cancer is leukoplakia, a thickening of epithelium tending to lead to cancer. This condition is common in syphilis and more common in heavy smokers. In recent years we have begun to see leukoplakia in females as they have begun to take up smoking, and if smoking is to be a factor among females, we may expect to see an increase in cancer of the mouth among them.

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TUMORS OF THE MOUTH AND JAWS*

V. H. KAZANJIAN, M.D.†

DR. McCARTHY told us about chronic irritation as a factor in causing carcinoma of the mouth. That probably is not the only cause. There must be something else besides chronic irritation causing cancer. We know that if we avoid chronic irritation, whether chemical, physical, or bacterial, we shall be able to diminish the number of cases.

What can the dentist do in this problem? I think he can do more to recognize the early lesions than the medical profession because he is in constant touch with the patient, and it is the dentist's job to examine the mouth.

There is one thing which I did when I practised dentistry, and most dentists do now, and that is, look at the mouth merely in terms of teeth. Now we must change our conception. We must examine the mouth as a whole and see the conditions of the soft tissues and the conditions of the teeth and of the palate as well as of the throat, tonsils, and tongue.

There are a number of tumors and cysts in the mouth which are purely benign in character; that is, they may do harm locally but they do not metastasize and do not endanger life. Among these are dental cysts. Some of these are due to chronic infection and some are due to remnants of an imbedded or encapsulated tooth. They keep on growing but they are encapsulated and show definite walls. On x-ray examination their position is clear and they are non-malignant as far as location is concerned, but they may grow large enough to destroy part of the jaw or cause fractures. When we open a dental cyst, we find a cavity lined with mucous membrane probably containing a yellowish fluid or purulent fluid depending upon the amount of infection present. This apparently harmless cyst as seen in x-ray may be a malignant tumor and we should have that in mind; for instance, there are numbers of sarcomata of the jaw which may simulate non-malignant lesions in the x-ray film, and if we do not have the distinction in mind, we may miss the diagnosis. Dentists see cystic cavities around the jaw so often that they fail to take precautions to make biopsies or send specimens to the laboratory.

Of course, the treatment of a simple cyst consists in removal of the membrane and obliteration of the cavity. When, however, we have a malignant growth in the form of a sarcoma, then the picture changes. Very often the x-ray picture is different, but there are border-line cases where they look alike. I have had a few cases of dental cysts which have been mistaken for sarcoma. We must distinguish also between simple cyst and multilocular cyst. The line of demarcation isn't always present. The multilocular cysts cannot be treated in the same way as the simple cysts or there would be a recurrence. They are essentially epithelial tumors and they are derived from embryonic cells. Treatment consists in total excision of the parts in multilocular cyst, which means removal of a section of the bone; but if the case is recognized at an early stage, it is only necessary to remove the outer section of the bone and thereby eliminate the disease. Sometimes patients have been treated for cystic conditions when they were really suffering from osteomyelitis.

Another kind of non-malignant tumor is the so-called epulis, which is a connective tissue tumor. It is a tumor which grows between the teeth and gradually loosens them. There is characteristically a small pedicle and a cauliflower-like growth. They are not malignant tumors and are easily taken care of by removal surgically, but if they are left to themselves, they gradually grow larger, and as the patient bites on them, ulceration takes place, and this chronic inflammatory tissue may stimulate epithelial growth and turn into cancer. These tumors are derived either from periosteum or peridental membrane, and it is necessary to eliminate periosteum or remove part of the bone at the base before we can expect any cure.

There are other tumors, angiomata of the mouth, which are harmless except that they may cause hemorrhage. They appear on the inside of the lips or cheeks as bluish, spongy tissues, and their greatest danger is in their ability to cause hemorrhage. If they are very extensive, they cause a certain amount of deformity.

In elderly people we frequently find ridges of fibrous tissues hanging in the fold between the alveolus and the lip. They look like the surrounding membrane but they do not belong there. They are due to ill-fitting plates. They are simple fibromata.

Similarly, we find patients with little papillomata or fibromata which hang from the cheek or palate. These are mostly simple tumors and the patient gives a history of a long duration.

We have some hard tumors which are normal, as a large exostosis in the median part of the palate, and at times tuberosities in the upper jaw and in the lower jaw. I have never seen them do any harm except locally, as they create difficulty for the dentist in making plates. They are perfectly harmless tumors and their removal

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is simple. I do not advocate removal unless there is some necessity.

Now in contrast to these few important non-malignant tumors, we have pre-cancerous lesions such as leukoplakias and their removal is very necessary. Leukoplakia we can recognize when it is advanced, but in the early stages it is hard to distinguish from lichen planus and thrush. Acute thrush is a rare disease and is usually confined to children. If adults have it, they get it from their children, and a microscopic examination of scrapings from the mouth will establish the diagnosis.

In cases of this kind I first tell the patient to stop smoking, and it is surprising to see how soon the mucous membrane of the mouth resumes a normal appearance after smoking is done away with. If the tissues are hard, we must use surgery or other means. We can use applications of radium or applications of diathermy. Naturally, being surgically inclined, I give preference to diathermy, and these areas are burned with the endothermy knife. It is a simple process and in most cases gives a permanent cure, while radium is uncertain in its results.

In addition to trying to recognize early lesions in the mouth, dentists could also help by trying to decrease the agents which are likely to cause irritation of the soft tissues. By that I mean that our technique in the restoration of a large tooth or making a bridge or a plate or any appliance in the mouth should be such that it doesn't cause any irritation to the soft tissues so that the patient will not suffer chronic irritation. Patients suffering from cancer of the mouth usually have very dirty teeth. Their mouths are badly neglected and you see a lot of sharp roots and teeth. Therefore, the movement for oral hygiene is in the right direction for preventing cancer as well as for preventing focal infections.

Of course, if a case of malignant tumor of the mouth has progressed until it has become inoperable, everybody will recognize it without trouble; but real good comes from recognizing early lesions. If you see some lesion which is not normal in the mouth, you should decide how the texture of that tissue compares with the surrounding tissues, whether or not the color looks normal, whether the epithelial covering is normal, and whether or not it bleeds easily as compared with the healthy parts. Next determine whether the base of the lesion is hard and indurated, whether the lesion is ulcerated, and it is very important to know whether the underlying tissue is soft or hard, whether the borders are becoming indurated and elevated or just smooth even surfaces. At times superficial infections may cause a lot of sloughing in the center and leave a sharp elevated or depressed border. They may be malignant or they may not. We want to know the age of the patient, the time of onset, the duration of the lesion, and whether it is tending to progress or to get well. Finally, we may employ special diagnostic measures, as the Wassermann reaction for syphilis, smears in Vincent's infections, and so forth, and our final diagnosis is based upon taking a piece for biopsy. In taking a piece for biopsy, we usually use the endothermy knife which forms a coagulated wall so that there will be no chance of the tumor spreading into the blood stream.

CANCER OF THE NOSE AND THROAT*

EDWARDS W. HERMAN, M.D.†

CANCERS of the nose and throat may be classified according to their location, as follows:

1. of the nares, septum and turbinates
2. of the accessory nasal sinuses: antra, frontals, ethmoids, and sphenoids.
3. of the naso-pharynx
4. of the fauces: tonsils and soft palate
5. of the epiglottis
6. of the laryngo-pharynx: base of tongue and pyriform sinuses
7. of the larynx

CANCER OF THE NARES

Neoplasm of the nares may cause nasal obstruction and bleeding but some forms do not bleed and some forms do not obstruct. Either symptom alone is sufficient cause for a complete examination. Pain is a rare symptom. Such signs as external deformity, a protruding tumor mass in the vestibule, or disturbances of vision and exophthalmos are late manifestations indicating extensive involvement. The presence of ulceration demands the removal of a specimen.

Before advising radical operation or radium treatment, the history, local examination, and pathological report must all coincide. If there is inconsistency, if the pathological report is "chronic inflammatory" when the case is clinically malignant, further specimens must be obtained before making the diagnosis and advising treatment. Radical operation on the sinus for malignancy has a surgical risk. The primary risks are hemorrhage and the usual risks of a major operation. The secondary risks are meningeal infection, and embolic transmission

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of the disease. We have had a death from a purulent meningitis following excision where no extension was suspected but when on post-mortem examination, microscopically, extension of the neoplasm into the dura could be seen. Occasionally metastases occur in the lung with a fatal termination many months later when there has been no local recurrence and when the cervical glands have at no time been involved. Probably a blood stream transmission; possibly inhalation transplant.

Treatment of the first class of cases consists in radical surgical operation or radium or both. The electro-surgical instrument is particularly suited to this type of work. Radical irradiation is likely to result in more destruction of bony structures than surgery. No attempt at plastic reconstruction should be undertaken until all sequestra have separated, and until the whole area has been watched carefully for evidence of local recurrence. Recurrences should be dealt with promptly and very radically.

Lateral rhinotomy gives a satisfactory exposure of the anterior portion of the inside of the nose. When carefully done, there is imperceptible scarring or deformity. The incision extends from the middle of the nasal bone opposite the inner canthus of the eye and curving downwards, sweeps around the ala of the nose and into the vestibule. It is carried down to and through the muscles, fascia, cartilage, bone and nasal mucous membrane. The whole external nose may then be retracted over, and the cheek retracted laterally, thus giving adequate exposure to lesions involving the anterior portion of the inside of the nose.

The ether anesthesia for this operation is carried on by a large pharyngeal tube about three-quarters of an inch in diameter and at least two feet long. One end is placed back of the tongue in the laryngo-pharynx, the naso-pharynx being packed off with gauze, and the tube is held in place in the mouth by gauze packs on either side along the jaws. The distal end extends well away from the operative field. Inspiration and expiration take place entirely through the tube. If the ether is discontinued the anesthesia will continue for a relatively long time since the length of the tube gives a re-breathing effect This device has been found very satisfactory for operations on the upper jaw, nose, and sinuses when troublesome hemorrhage may occur or when the electro-surgical current is to be used.

CANCER OF THE ACCESSORY SINUSES

Primary cancer of the ethmoid develops so insidiously that recorded cures are rare. The earliest symptom is either nasal obstruction or exophthalmos; both symptoms significant of extensive disease. The ratio of occurrence (H.H. records) compared with carcinoma of the antrum is about 1:7. Only a small percentage of these cases consent to operation. Furthermore the post-operative records show streptococcus meningitis, or metastases in the brain, or in the liver as the cause of death. Those cases of cancer of the ethmoid and orbit that develop from a lesion near the inner canthus of the eye offer a better opportunity for cure. These cases are usually basal cell carcinoma, curable in the early stages, but it requires great courage to operate radically upon such a relatively small, painless, slowly growing, insidious little ulcer—the basal cell carcinoma of the eyelid or of the ala of the nose.

The ordinary doses of radium are ineffective in these cases when they have extended into the sinuses. They lead to false hopes. There is improvement but not a cure. Cure can result only from radical surgery, possibly combined with irradiation. By radical surgery is meant the removal of all visible growth and a reasonable margin regardless of deformity. By radical irradiation is meant a radium dose, not just an erythema or an ulcerative dose, but a dose many times as large; a dose of two to four thousand millicurie hours in the center of the diseased cavity and preferably distributed over a period of five days or more, a dose that is regardless of subsequent bone necrosis.

If the eye is to be removed for malignancy in the ethmoid region, nothing short of a complete exenteration of the orbital contents should be allowed. Such a procedure gives an excellent exposure of the antrum, ethmoid, and frontal regions. It leaves a permanent opening for subsequent inspection and treatment. The deformity may be covered by an eyepatch only a trifle larger than those in ordinary use, or, later, an artificial eye that moves like a doll's may be held in place by a prosthetic device. The eyelids should be removed; they become edematous, deformed, or dangling. They are of no assistance in the ultimate prothesis and in the meantime are clumsily in the way.

If there is carcinoma in the ethmoid region and an attempt is made to save the eye, the approach through the external ethmoid incision with a permanent window in the cheek may prove adequate. If the orbital cavity is involved, the eye should be removed including the orbital contents and the bony walls adjacent to the antrum, ethmoid, or frontal, one or all, according to the indications in each case.

CARCINOMA OF THE NASO-PHARYNX

The earliest symptom in this group of cases is likely to be nasal obstruction, often unilateral at first. There may be some discharge or bleeding as a later symptom. Failure of early diagnosis is most commonly due to carelessness in examining the patient. A confusing factor in the diagnosis is the unusual histological appearance of biopsy specimens, due to the frequent admixture of lymphoid elements. It is not unusual to have differing opinions among pathologists as to the exact nature of the tumor present.

Treatment for carcinoma in this region is un-

satisfactory. The growth is rarely accessible to complete surgical removal. It seems preferable to use radium in the form of gold seed implants, employing surgery, if at all, only for removal of the exuberant portions of the growth. All too often, however, the growth yields locally to radium, only to re-appear as metastases in the neck or more remotely.

These cases are difficult to diagnose in the early stage. Painless, symptomless, difficult to see, impossible to feel, not demonstrable by x-ray, often it is only when there are gross metastases in the neck from an as yet undiscovered primary lesion that the diagnosis is suspected. They are then operatively hopeless, yet I believe we will learn to cure them by proper radium irradiation.

CARCINOMA OF THE TONSILS

In 1924 there were nineteen new cases of cancer of the tonsil with only one record of cure. This case, however, was a squamous cell carcinoma and was not operated upon except for the removal of a specimen. The good result may be fairly attributable to irradiation,—radium and x-ray.

Cancer of the tonsils is a well-nigh invariably fatal disease according to the records at this hospital. The use of radium is developing: at first a dose of from ten to fifteen millieurie hours was given by applying a steel needle upon, or into the growth for one-half to one hour according to the strength of the radium contents of the needles; later the radium emanations in capillary glass "seeds" containing from 1 to 2 or more millieuries were inserted into the growth by means of trocars and allowed to remain, doses of 200 to 1000 or more millieurie hours according to the number of seeds used. The first method of treatment was utterly ineffective. The second method often induced a more or less complete disappearance of the local lesion. Neither method effected a cure.

In the year 1921, for example, there were twenty-two new cases of cancer of the tonsil; they all died from metastases except one, and that case had the benefit of a surgical excision of the tonsillar tumor and a dissection of the neck for obvious metastases; she was alive and well seven years later.

The next step in advance was the use of gold seeds, made by using capillary tubes of gold instead of glass in which to collect and distribute the radium emanations. The gold screened irradiation was less caustic and the effect of the gamma rays seemed more noticeable; the growth would shrink with much less ulceration and the effect of a given dosage seemed to extend further. I have seen definite epilation of the skin below the jaw from gold seeds inserted into a lesion at the base of the tongue, no x-ray having been used on that case.

In the meantime we began to use surgical diathermy, a high frequency alternating electric circuit which at the point of a needle electrode may be made to cut or split tissue without pressure and without cauterizing, or to desiccate, or to cauterize, or to carbonize, these varying effects being dependent upon (1) the size of the electrode, (2) the width of the spark gap or frequency of the current, (3) the amperage or volume of the current. This machine gave a new stimulus to operating for cancer, especially for cancer in the nose, throat, and larynx, first because there was less danger of disseminating the disease and secondly the relative dryness of the operating field when the machine was properly adjusted.

The use of the surgical diathermy, a device that has not yet been properly christened, plus improved methods of using radium give promise of better result.

CARCINOMA OF THE EPIGLOTTIS

The extent of growth when we first see the case usually precludes radical operative excision for that would require a total laryngectomy, a block dissection of the neck on both sides, and the removal of the posterior half of the tongue and epiglottis. Any case that is recognized early enough to be entirely removed either intraorally or by a lateral pharyngotomy would be a life saved, and the credit for that life should be divided between the physician who observes it, the surgeon who operates effectively, and the patient who submits to a more or less radical operation at the time when his symptoms are as yet quite trifling.

The use of a sufficient number of radium seeds will cause such a satisfactory temporary or permanent local disappearance of the growth that there is a tendency to use it hopefully and thus pass by the chance for radical surgery.

At present the treatment of cancer of the epiglottis must be, if operable, radical operation; if inoperable, the use of radium. Tracheotomy is, of course, a very satisfactory means of palliating in the advanced cases.

CARCINOMA OF THE LARYNGO-PHARYNX

Often carcinoma in this region, as in the tonsil or epiglottis, gives rise to practically no symptoms until it has advanced to an inoperable condition. A slight sense of fulness, dryness of the throat, occasional slight soreness or hoarseness, these are all that are noted. Dysphagia, dyspnea, pain, tumor are all later symptoms. These cases are often treated with gargles until metastases appear in the neck and a search is made for the primary lesion. Some who can't see will feel, but many times the longest finger won't reach it. If the symptoms, no matter how insignificant, are persistent and progressive, then let the examination be as thorough as it can be made. Under ether, see and feel all that is possible. Remove a specimen whenever obtainable; if it may not be done with diathermy, pack the wound with 10% formalin on gauze.

CARCINOMA OF THE LARYNX

Cancer of the larynx has not been successfully treated with radium; in over a hundred cases there was not a recorded cure.

There were two cured cases which clinically simulated carcinoma, but the pathological report did not confirm the diagnosis; they were reported to be non-malignant papilloma. In both these cases the growth was very extensive, requiring immediate tracheotomy on admission to the hospital.

Laryngotomy (laryngo-fissure) is the operation of choice for carcinoma of the larynx. The restoration of function is most satisfactory, but this operation, to be successful, requires early diagnosis.

Most of the cases that come to this hospital are astonishingly advanced, often requiring tracheotomy before even attempting a diagnosis. Such cases are not curable, but they were all early carcinomata at one time and most of them could have been cured by early diagnosis and prompt laryngotomy.

There is only one symptom of early carcinoma of the larynx, and that is persistent impairment of the voice, even before noticeable hoarseness, just a roughness or an undue effort in speaking.

The diagnosis should not be delayed by waiting for fixation of the cord. It is then too late for laryngotomy; a total laryngectomy would offer the better chance. To make an early diagnosis of carcinoma of the larynx, there should be a direct laryngoscopy under ether and the removal of a specimen, then a laryngotomy as promptly as possible when the diagnosis is confirmed. If there is a probability rather than a possibility that the case is malignant, it is better to do a laryngotomy for the removal of the specimen, to have the pathologist at hand to make a frozen section at once, and to proceed with the excision of the growth if proved to be carcinoma. The use of surgical diathermy greatly facilitates laryngotomy and the excision of carcinoma.

If the case is inoperable either by laryngotomy or total laryngectomy, what can be done? The patient may be given x-ray treatment until tracheotomy is indicated, then do a tracheotomy under local anesthesia, etherize the patient through the tracheotomy tube, expose the growth by direct laryngoscopy, and insert a few gold or platinum screened radon seeds into the cancer, and then more x-ray treatment. Palliative measures.

MORTALITY FROM AUTOMOBILE ACCIDENTS: 1928

Washington, D. C., December 6, 1929.—The Department of Commerce announces that in the death registration area in continental United States there were 23,765 accidental deaths in 1928 charged to automobile accidents (excluding collisions with railroad trains and street cars), and that the death rate from this cause was 20.8 per 100,000 population as against 19.5 in 1927, 17.9 in 1926, 17.0 in 1925, and 16.7 in 1924.

In 1928 the registration area included 44 States, the District of Columbia, and 10 cities in nonregistration States. These states and cities together included 95.4 per cent. of the total population of the United States. On this basis the number of deaths due to automobile accidents is estimated at 24,900 for the whole country.

For purposes of comparison it may be helpful to consider the increase for the 38 States which were continuously in the registration area during the five-year period. Counting only the same class of fatalities throughout this period, namely—automobile accidents, excluding collisions with railroad trains and street cars, there was an increase from 14,806 deaths in 1924 to 21,513 in 1928. This represents an increase in rates from 15.7 to 21.4, or 36.3 per cent.

It should be noted that the deaths assigned to automobile accidents do not include those due to collisions of automobiles with street cars or with railroad trains. In 1928 there were 542 deaths due to collisions with street cars and 2,041 deaths due to collisions with railroad trains; these, if added to the 23,765 referred to above, would make a total for the registration area of 26,348 deaths due to accidents in which automobiles were involved, and would raise the rate from 20.8 per 100,000 population to 23.0.

These deaths constitute 1.9 per cent. of all deaths and 29.0 per cent. of all deaths from accidents. In 1925 this class of deaths constituted 1.6 per cent. of all deaths and 23.9 per cent. of all deaths from accidents.

As has been frequently pointed out, uncorrected figures showing deaths from automobile accidents, especially in cities, may be very misleading, because many who are fatally injured outside the city are brought to city hospitals, and since deaths are tabulated according to the place of occurrence there is usually a higher city death rate than would otherwise be shown. Figures show how many such deaths are known to have occurred in 1928 and in 1927. The importance of this factor is well illustrated by the figures for Camden, Trenton, New Haven, Albany, and Reading for 1928, and for Camden, Hartford, New Haven, Albany, and Wilmington for 1927, which show that at least half of the deaths were due to accidents which occurred outside of the city.—*Department of Commerce.*

Case Records
of the
Massachusetts General Hospital

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICO-PATHOLOGICAL EXERCISES

EDITED BY R. C. CABOT, M.D.

F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 15501

METRORRHAGIA

SURGICAL DEPARTMENT

A married American woman twenty-two years old entered March 23 complaining of bleeding from the womb.

She was married at sixteen and had had six pregnancies. A month before her first delivery the membrane was ruptured. She was delivered by forceps. Seven months after this birth she had a miscarriage at five months following a kick in the abdomen from her drunken husband. Six months later she had a second miscarriage at three months. During this third pregnancy she had attacks of fainting and much nausea and vomiting. After this miscarriage she was very ill and was told she had blood poisoning in the womb. A month after the second miscarriage she became pregnant for the fourth time in twenty-four months. She stayed in bed most of the time during this pregnancy. She had much nausea and vomiting, and bled every time she got on her feet. There was much low back pain radiating down the thighs and into the legs. Her lower extremities were paralyzed for three months before her delivery. She had a high forceps delivery. The child was living and well at her admission, two and a half years later. For the next seven months her menstruation was normal. Then she again became pregnant, and after two months had metrorrhagia for a month. She was operated upon at a hospital which reports a preoperative diagnosis of cyst of the left ovary and double chronic salpingitis, a postoperative diagnosis of pregnancy. Normal tubes and ovaries were found. Appendectomy was done. The uterus was opened and the fetus and placenta removed. For the next year and a half she was treated in the Out-Patient Department for low back pain. Her menstruation was normal except for scanty flow. She wore a plaster jacket for a month without relief. Examination in the Out-Patient Department in November, four months before admission, showed costovertebral tenderness and marked limitation of motion on both sides. The uterus was in anterior position. The surface was hard and showed latent laceration. There was slight tenderness in the posterior vault upon pressure toward the back. An x-ray plate of the spine showed no evidence of arthritis. In the sacro-iliac region there was a slight variation from the normal. The region of the ileum on the right side was more dense than normal and the structure of the bone was somewhat irregular, suggesting infection. At a later examination the anterior curve of the lumbar vertebrae appeared increased. There was no definite evidence of displacement of the fifth lumbar. The previous findings were confirmed. There was increased density in the sacro-iliac joint, especially on the right. Examination in the Orthopedic Department showed faulty posture, scoliosis and acute right sacro-iliac disease. The back was strapped. A corset and a jacket gave little relief. In December, three months before admission, when two months pregnant, she again had metrorrhagia lasting a month. Then the fetus was expelled. She was in bed at her mother's home until March, then in a convalescent home until two days before admission. Eleven days before admission profuse metrorrhagia started again. The lower back pain continued to trouble her very much, sometimes radiating downward into the thighs.

Her mother had had two operations for tumor in the uterus, and had also had nervous prostration.

The patient was a premature birth at seven months. She had had tonsillitis frequently. At ten years she came to this hospital for tonsillectomy, but was refused because of hemorrhage from the nose and nasopharynx. She was told that she was a bleeder. Before marriage her menstruation was regular but painful. Five months before admission she had hemoptysis, less than a teaspoonful. She had cough and cold for four months but none at admission. She had palpitation and dyspnea on climbing one flight of stairs. She had periods of dizziness and fainted not infrequently. Her appetite was fair. For twenty months she had taken enemas daily.

Clinical examination showed a poorly developed, poorly nourished girl chronically ill. The throat, heart and lungs were normal. The spine showed scoliosis. The abdomen showed a well healed midline suprapubic scar. There was tenderness on palpation just above Poupart's ligament. Pelvic examination showed the cervix large, rough and lacerated. The fundus was not palpable unless it was slightly tipped to the right and backward. There was a small tender mass believed to be the right adnexa. Nothing could be felt in the left vault. Rectal examination showed nothing varying from the vaginal findings. The rest of the examination was negative.

The record of laboratory data before the first operation is missing.

March 25 operation was done. She made a good immediate postoperative recovery. The following day there was a little rise of temperature and pulse. She complained of pains between

the shoulder blades and headache. She was highly apprehensive. Whether this was neurotic or not was uncertain. For the next two days she had some trouble in voiding. Then she began to vomit and was restless. The temperature and pulse were high. The abdomen was distended.

April 1 a second operation was done. The temperature was high for the next three days, and she had distention and vomiting. Beginning April 4 she made improvement, though she still had temperature, gas pain, and more or less distention in spite of all methods for relief. The wound showed some discharge, but looked fundamentally right.

April 9 a third operation was done. She continued to have great distention.

April 10 a fourth operation was done. Two days later 500 cubic centimeters of blood was transfused. That day the pulse was 160, the respirations 30, the temperature 101°. The general condition was a little better. The distention was not so great. There was much purulent drainage except from one of the tubes, which was not draining at all.

The night of April 17 loud bubbling râles suddenly developed all over the right chest and loud tracheal râles, with a rise of temperature to 101.6°, pulse to 185 and respirations to 36. The following morning all the signs had nearly disappeared. The distention and pain were growing less all the time. For the next four days the temperature swung from subnormal to 102° or more every day, the pulse from 120 to 140 or more. There were signs of fluid in the left chest and a friction rub in the right chest. X-ray examination showed a shadow of fairly even density over the left lung field except for a small area at the apex. The outline of the diaphragm and the left border of the heart were obliterated. A chest tap gave 175 cubic centimeters of clear serous fluid, specific gravity 1.020, 1 to 2 polynuclears per field. A culture showed streptococcus hemolyticus. April 24 the wound was open and showed pus. The temperature and pulse were a little better than before the chest tap, but there was still fluid in the chest. The operative wounds were healing well.

April 28 a trocar thoracotomy was done in the 9th left interspace and considerable clear serous fluid obtained. Two days later the temperature and respirations were normal in the morning, the pulse 110. The patient had some discomfort in the chest, and vomited. She continued to improve however, and after May 3 vomited only occasionally. The chart was flat. May 8 and 9 there was much vomiting again. The skin around the chest tube showed an extreme degree of hyperesthesia. X-ray examination with a barium enema showed evidence of two regions of partial obstruction, one in the second portion of the duodenum and one in the terminal jejunum. She developed a broncho-pneumonia, and May 19 died.

Presentation of Case and Clinical Discussion

BY RICHARD P. SWEET, M.D.* AND RICHARD C. CABOT, M.D.

That rather long first paragraph covers a great deal of history which is of little importance. It chiefly serves to show that she had had rather a hard life of it and that she came into the hospital because of persistent bleeding. The trouble with her was frequent pregnancies and a run-down condition. One outstanding thing about her was that she was below par. She had had frequent pregnancies, had some anemia, was thin, had poor posture and was not so good an operative risk as the average healthy person might be. One might wonder why we decided to operate. The history of persistent bleeding, the fact that she had had so many pregnancies, the social background, led the surgeon to decide upon hysterectomy, in the hope that by having the uterus removed the patient would be entirely well, instead of doing another curettage. She was operated on.

DR. CABOT: What was the diagnosis of the condition of the uterus before operation?

DR. SWEET: Before operation there was nothing abnormal about the uterus except that it was retroverted. Upon examination somebody thought he felt a mass in the pelvis, but after careful palpation I felt nothing abnormal.

DR. CABOT: There was no evidence of fibroid or carcinoma?

DR. SWEET: No.

DR. CABOT: What was thought to be the condition of the uterus?

DR. SWEET: Hyperplasia of the endometrium, the result of too many pregnancies.

DR. CABOT: I am considerably out of my field. Hyperplastic endometrium used to be an old friend of ours for which we did dilatation and curettage and sometimes gave x-ray treatment. I take it that it was not the condition of the uterus and bleeding alone, but a combination of other factors which favored operation in this case?

DR. SWEET: It was the combination of the pathologic condition, which was not serious, with the social condition, the number of pregnancies and maltreatment at home.

DR. CABOT: Hysterectomy as a method of birth control certainly sounds strange. Along with those two things she had a certain amount of anemia?

DR. SWEET: We do not know what her anemia was.

DR. CABOT: When we are considering any uterine bleeding, controllability of anemia is one of the major things in our minds. Poor posture, I take it, had nothing to do with your decision?

DR. SWEET: No.

A STUDENT: According to this record she had an infection in her sacro-iliac joint shown by x-ray.

*Resident surgeon on the East Surgical Service.

DR. SWEET: On the Surgical Service we had no knowledge of that at all. At the time she came to us she was not complaining of that. Her chief trouble at the time that x-ray was taken was faulty posture. I do not think it was an acute inflammatory disease of the joint. I think it was the result of trauma from posture.

DR. CABOT: I take it there was no true arthritis, no infection, but some traumatism of that joint, a result of bad posture.

A STUDENT: What is the possibility that she was pregnant for the seventh time?

DR. CABOT: I take it that was excluded by the pelvic examination. Profuse bleeding started eleven days ago. Certainly one ought to be able to determine whether there is pregnancy if there has been recent profuse bleeding.

A STUDENT: Was she a true bleeder?

DR. SWEET: Apparently she was not. The statement was made that she was told she was a bleeder, but experience showed that she was not.

PRE-OPERATIVE DIAGNOSIS, MARCH 25

Metrorrhagia.

FIRST OPERATION

Gas and ether. A right paramedian incision was made excising the scar in the skin from the previous incision. The uterus was rather small and boggy. The tubes and ovaries appeared essentially normal. The appendix was absent. There was practically no omentum in the abdomen. A simple supravaginal hysterectomy was done without difficulty and the ovarian vessels stump was buried by peritoneum. A good flap of peritoneum was turned over the cervix. The endocervical canal was cauterized with carbolic acid. The sigmoid was then placed in the pelvis. The abdomen was closed in routine manner.

PATHOLOGIC REPORT

A uterus 7 by 6 by 3.5 centimeters in size and negative except for a slightly nodular appearance of the endometrial surface in several areas. Two negative tubes and an ovary containing a large number of small cysts.

On microscopic examination there are two small areas in the endometrium which show the presence of degenerate decidual cells and chorionic villi. The endometrial stroma shows a marked lymphocytic infiltration. The ovary is negative except for numerous follicular cysts. The tubes are negative.

Retained deciduae.
Chronic endometritis.
Retention cysts of ovary.

FURTHER DISCUSSION

DR. CABOT: Have you anything to add to that operation, Dr. Sweet?

DR. SWEET: I think one ovary was taken out and one ovary left. It was a supravaginal hysterectomy, with nothing unusual.

DR. CABOT: What are they going to operate for the second time? It looks to me as if they were going to operate for peritonitis, or for a partial intestinal obstruction. As the temperature and pulse were high my guess would be that they thought the first operation had not been wholly successful in the avoidance of sepsis, so they thought they would look in and see. Am I right?

DR. SWEET: Yes, except that the operation was done to relieve the distention. We did not hope to relieve the peritonitis. The operation was done under local anesthesia and was an enterostomy. We found fluid and evidence of peritonitis in the left upper quadrant where the incision was made. We took a culture. It was reported as showing streptococcus hemolyticus.

PRE-OPERATIVE DIAGNOSIS, APRIL 1

Paralytic ileus.

SECOND OPERATION

Local novocain. A small upper left rectus muscle splitting incision was made. On opening the abdominal cavity two loops of distended small intestine presented beneath a layer of tissue which appeared to be very thin omentum. There were considerable plastic adhesions between the several loops of intestine. One loop was brought through the omental tissue into the wound. A gastric clamp was placed on the loop and an enterostomy was done, using the Witzel technique and a small rubber catheter, about number 16. Some of the omentum was then sutured around the tube and the intestine at the line of suture. The wound was closed in layers. There was a small amount of thin fluid in the upper part of the abdominal cavity.

FURTHER DISCUSSION

DR. CABOT: They operated with the idea of finding peritonitis, found peritonitis and tried to relieve the distention.

We come somewhat unexpectedly to the third operation. There must be something more that we do not get from the record. The record says she made improvement.

DR. SWEET: She did not improve. She was somewhat relieved, but she had distention and pain and ran a temperature. The persistent distention in the face of the enterostomy made us feel that she might have some active peritonitis going on, as of course she had. A vaginal puncture was done, at which time we got a good deal of pus out of the pelvis.

DR. CABOT: You did not open up the old wound at all.

DR. SWEET: The old wound was not draining. What is meant in the record by "drainage" is drainage from the enterostomy tube.

The fourth operation was done because we

felt she had obstruction in addition to peritonitis. An incision was made through the first incision, that is, the suprapubic incision. A good deal of peritonitis was found. There were collapsed coils of intestines and some dilated coils. It required a lot of difficult manipulation in the pelvis to straighten out the obstruction, fill up the collapsed coils, and put a tube into another dilated loop the identity of which was not clear.

DR. CABOT: They seemed to be on the whole more successful this time in getting at the causes of trouble.

What would you say about those râles and their significance under these conditions?

A STUDENT: She was developing bronchial pneumonia.

DR. CABOT: That is a possibility. What is another?

A STUDENT: Pulmonary edema.

DR. CABOT: Yes. Heart failure. We do not know whether there is a heart lesion or not, so we should say "failing heart." Anyone who has been through all this patient has been through has a right to have heart failure.

A STUDENT: Why is it all on one side if it is pulmonary edema?

DR. CABOT: That is a good question. I do not think I can answer it.

A STUDENT: Could it be obstruction of the left bronchus?

DR. CABOT: If it is really obstructed we ought to get massive collapse.

DR. TRACY B. MALLORY: You do not get râles if no air is getting in.

DR. CABOT: Yes. Râles mean that the lung is functioning. We do not seem to have evidence of massive collapse. The question still is why if it is passive congestion she should have it only on one side. I cannot answer that question.

The râles and other signs had disappeared the morning of April 18. I do not know their cause; perhaps post-mortem will show us some evidence of what that was.

That X-ray film shows the right border of the heart pushed over a little, I think. Here is a sizable pleural effusion on the left. That plate does *not* show what many cases do, a slanting up of fluid toward the axilla.

The chest tap of 175 cubic centimeters must be less than they hoped for.

A dropsical fluid could not have this notably high gravity. But it is all right for any variety of serous pleurisy so far as I know.

We pass on apparently from that crisis to the next one.

In doing the trocar thoracotomy they must have expected pus and apparently did not get it.

I suppose that when the chart was flat everyone thought she was going to get well.

I do not know that the hyperesthesia means anything in particular in the absence of other signs.

Are there any points in addition to the history given in the record?

DR. SWEET: Nothing except that all during this time she complained of spasmodic attacks of pain which we explained as due to partial obstruction. She had attacks of colicky pain which apparently meant some obstruction. Her abdominal condition was not entirely well, but much better. Her abdominal wounds had entirely healed. She had a gastro-intestinal x-ray series which is said to show obstruction at one point in the second portion of the duodenum and at one in the terminal jejunum. Those x-rays were taken because we expected obstruction.

DR. CABOT: We are dealing with a woman who comes in for bleeding of the uterus, in poor condition due to rapidly repeated pregnancies. They think it advisable to perform a hysterectomy, and they get a peritonitis after it. Then that is apparently relieved, but she gets a streptococcus pleurisy on the left side and also an attack of what we should call passive congestion from failing heart if it were not for the fact that it is on only one side. Edema is a strange thing. It is not very unusual to have it on one side only. In heart disease I have seen edema in one leg and not in the other or more in one leg than in the other. I do not know what to call this attack other than failing heart.

She then had more or less serious intestinal obstruction, presumably due to peritonitis and gluing together of coils of intestine.

A STUDENT: According to the record, for twenty months before entrance she was taking enemas daily. Was that due to a run-down condition?

DR. CABOT: I should say it was due to constipation. Some people take either catharties or enemas daily for a good many years. I do not approve of the practice. But I do not think it should make our diagnosis any more serious.

It seems that what we have is a case of *sepsis after operation*. The infection got into the pleura by lymphatics or by the blood stream. She did not beat it out, but she came very near it. It certainly seemed at the time when the temperature was down that one could hope she was conquering it. The bronchopneumonia of which I think she died was an expression of the same sepsis, an infection which lighted up in one place or another and resulted in death.

Anticipating the post-mortem, we ought to find evidence of this pleurisy on the left side. We ought to find evidence of an old subacute peritonitis, probably with gluing together of coils, and I suppose we are going to find pneumonia, of which she died according to the clinical record. I do not see anything wrong with the heart, kidneys or liver. It is conceivable that there is something in or near the liver as part of

the general sepsis. Liver suppuration can be silent. There is no evidence of disease in the nervous system or in any other part of the body except the organs I have named. We have no reason to suppose there was any failure in surgical technic. In spite of all precautions sepsis will occur about once in so often. I do not suppose that in retrospect anybody thought of any failure in surgical technic?

DR. SWEET: No. We rehearsed everything. The only thing that could possibly account for the infection was that the nurse who was holding the retractor during the operation had at that time a bad sore throat.

DR. CABOT: Was her mouth covered?

DR. SWEET: Her mouth was covered as well as it could be.

DR. CABOT: The surgeons whose acquaintance I value do not like to operate with a sore throat even when they cover the nose and throat adequately. They do not feel sure of that protection. In view of what has been said we might perfectly well think that this is the explanation of this infection.

A STUDENT: Would you expect serous fluid from the chest with streptococcus hemolyticus? Isn't that more suggestive of tuberculosis?

DR. CABOT: Ordinarily it would be, but tuberculous pleurisy under the present conditions does not seem probable. Tuberculous pleurisy comes on slowly, not quickly. The previous examinations did not show anything of the kind.

A STUDENT: According to the note from the Out-Patient Department record there was costovertebral tenderness and marked limitation on both sides.

DR. CABOT: Yes; but that is not nearly enough evidence for tuberculous or any other sort of pleurisy. I do not think we ought to consider tuberculous pleurisy here, though Dr. Mallory may find evidence of it. I mean that on the basis of the facts we have here I think we need not consider it. So far as I know we should expect lymphocytes or cloudy fluid with tuberculous pleurisy.

A STUDENT: Would you consider tuberculous salpingitis in this case?

DR. CABOT: I have no evidence for it.

DR. MALLORY: One has strong evidence against it in six pregnancies.

A STUDENT: There was a small tender mass in the right adnexa.

DR. CABOT: Was anything found at operation to explain that?

DR. SWEET: We found normal tubes and ovaries.

DR. CABOT: I think we need not go further on that.

Dr. Holmes, I do not know whether those plates call for any comment or whether there is anything we can get some lessons from.

DR. GEORGE W. HOLMES: The somewhat distended small bowel is very well shown here. You may not have another opportunity to see as good an example of dilated small bowel as this. The fine marking represents peristaltic waves. The bowel is not completely paralyzed. That is a diagnostic point between paralysis of the small bowel and obstruction. This seems more like obstruction than paralysis. Ordinarily, as you know, the barium moves rapidly through the small bowel. You seldom get as good an outline as you do here. Peritonitis shows irregular edges; paralysis is apt to be smooth.

CLINICAL DIAGNOSES (FROM HOSPITAL RECORD)

General peritonitis.
Metrorrhagia.
Acute intestinal obstruction.
Chronic intestinal obstruction.
Empyema.
Bronchopneumonia.

DR. RICHARD C. CABOT'S DIAGNOSIS

Subacute pleuritis, left.
Old subacute peritonitis with adhesions and partial intestinal obstruction.
Bronchopneumonia.

ANATOMIC DIAGNOSES

1. *Primary diseases.*

Subdiaphragmatic abscess, streptococcus hemolyticus.
Retrocecal abscess.

2. *Secondary or terminal lesion.*

Bronchopneumonia.

3. *Historical landmarks.*

Chronic fibrous peritonitis.
Chronic pleuritis.

PATHOLOGIC DISCUSSION

BY TRACY B. MALLORY, M.D.

This case, as Dr. Cabot summed it up, was one of prolonged subacute sepsis. In most of these cases the prognosis depends upon whether all the various points of localization that develop can be found clinically and drained. If you get them all the chances of the patient's recovery are good. If you cannot get them the chances are poor. There were two foci which were not found and drained. The fact that they were not found was perhaps the fundamental cause of death. One was a subdiaphragmatic abscess on the left side above the spleen, instead of being above the liver, where we ordinarily see them in my experience. It was not a very large one, about five centimeters in diameter, and would probably not have shown any very definite localizing symptoms. In the lung on the same side immediately above the diaphragm was a small abscess, probably of the nature of a broken-down septic infarct. The thoracotomy had drained the

pleural effusion completely, and there was no fluid left at the time of autopsy. But the small abscess in the lung had not been discovered. There were also two pockets of pus in the lower portion of the peritoneal cavity behind the cecum, well down behind the pelvis. She had an acute purulent bronchopneumonia. The other organs except for evidence of various surgical procedures were negative.

DR. CABOT: I do not see how we can reproach ourselves for not finding that lung abscess or the subdiaphragmatic abscess over the spleen, unless the x-ray could have helped us.

DR. HOLMES: If we have pus directly below the diaphragm on either side, we should have paralysis of the diaphragm on that side. It is unusual to find it on the left, and we should not be looking for a subdiaphragmatic abscess on that side, but if we found a fixed diaphragm we might suspect it.

A STUDENT: Could you find it even with so small an abscess?

DR. HOLMES: Yes, if we had fixation of the diaphragm and nothing in the chest to account for it.

DR. CABOT: So it seems possible that might have been found out in the absence of any other cause for fixation of the diaphragm.

CASE 15502

JAUNDICE, ASCITES, AND HEMATEMESIS

MEDICAL DEPARTMENT

An English-American woolen mill operative of twenty-six entered June 1 in coma. The history was given by his wife.

He had never been very strong and had always complained of slight epigastric heaviness and gas after meals, constipation, frequent coryza and occasional blood clot in the nose. During the past six months he had complained of more constipation and epigastric heaviness and occasional slight nausea. He had never used alcohol, had had no signs of venereal disease, and had had no acute infection in the past six months. Seven weeks before admission he had rather gradual onset of jaundice, fatigue and anorexia. After a week in bed he felt better, though the jaundice continued and deepened and he had had clay colored stools until a week before admission. He returned to work for ten days, but felt worse. Six weeks before admission his abdomen and legs began to swell simultaneously and eructations of gas became marked. Three weeks before admission he had fever lasting a week and was comatose for five days. Then the jaundice and swelling became less and he was able to go to meals. Ten days before admission he was changed from liquid to solid diet and immediately began to have nausea, vomiting, fever reaching 103° a week ago, some headache and increased swelling. For the past week his stools had been yellow and very watery. A rectal tube gave some relief from gas. For two days he had been stuporous, at times delirious, had had urinary retention and required enemas. Eight months before admission he weighed 120 pounds, seven weeks ago 115.

There is no history of familial disease. His father and one grandmother had carcinoma of the face. One sister was jaundiced for a month four years ago, with complete recovery.

In his work in the mill he was exposed at times to ammonia fumes. No one else there had had a similar illness.

He had always been weak. He had had influenza. He had taken catharties, tonics and occasionally aspirin.

Clinical examination showed a well nourished man, comatose. The skin of the anterior and posterior chest and the forehead showed brownish-red papules and a few red petechiae. Heart not enlarged. A loud harsh systolic murmur, best heard in the third and fourth left interspaces. Blood pressure 140/60. Breathing slow, shallow and gentle. Mouth shut. Breath sounds seemed to be normal except at both bases, where they were distant. Dullness at bases. Abdomen much distended. Fluid wave. Marked pitting edema of legs, scrotum and buttocks. Pupils normal. Knee jerks and ankle jerks not obtained.

Urine: amount not recorded, dark, specific gravity 1.026, a very slight trace of albumin, bile present, 12 to 15 leukocytes and 5 to 6 red cells at the single examination, sediment loaded with hyalin, granular and cellular casts, marked increase in urobilinogen. Blood: 15,000 leukocytes, 95 per cent polymorphonuclears, hemoglobin 65 per cent, reds 3,500,000, moderate anisocytosis and polychromatophilia, platelets normal. Hinton negative. Non-protein nitrogen 36. Icteric index 100. Fragility test: hemolysis began at 0.42 per cent and was complete at 0.28 per cent. Two blood cultures, no growth.

Temperature 96.9° rectal. Pulse 121 to 91. Respirations normal.

The patient had several hematemeses. Otherwise his condition remained unchanged until the afternoon of June 2, when it became much worse and he died.

CLINICAL DISCUSSION

BY CHESTER M. JONES, M.D.

The symptoms are essentially epigastric discomfort and nausea. The coryza and blood we can simply disregard. The latter may be due to a few dilated veins in the septum which bleed easily when he blows his nose.

He certainly has an obstructive jaundice, but whether the obstruction is intrahepatic or extrahepatic is difficult to say. The extrahepatic

type of jaundice in a young person is usually associated with the presence of gall stones. It may be associated with enlarged glands along the common duct. A diagnosis of cancer or sarcoma is illogical. Jaundice due to an intrahepatic block due to ordinary catarrhal jaundice would be common, particularly at this age. The curious thing about this story is that it goes back six months. That would be unusual for catarrhal jaundice.

He has ascites, edema, jaundice,—symptoms certainly most characteristic of intrahepatic disease, namely cirrhosis, and of the type that one would call, I should say, infectious or toxic.

Eructations of gas are easily explained by the presence of fluid in the abdomen and disturbance of the intra-abdominal pressure.

We get fever in cirrhosis of the liver in almost every instance at some time in the course of the disease, as we see the cases on the wards. We also get some jaundice in all cases of cirrhosis, regardless of type. The jaundice in ordinary cirrhosis however is not of the intense degree that we see here.

He is comatose apparently because of what used to be called cholemia It simply means that he is very toxic, due to very severe hepatic insufficiency.

The temporary improvement, with the probable lessening of the ascites, was an extraordinary thing. It was only a very transient improvement, however.

He probably changed his diet because he was feeling better.

"His stools had been watery." That again is rather queer. He had not complete biliary obstruction, because the stools were said to be yellow. Watery bowel movements are not very characteristic of any type of disease associated with the biliary tract except disease of the pancreas. I do not believe this is pancreatic disease. There was some bile coming through. We also have a story that the jaundice improved a little. Probably he did have a complete biliary obstruction which let up a bit, as it can even with a process as severe as this, and some bile came through, with improvement in the symptoms.

He has edema, whatever it is due to. I should think it is entirely hepatic in origin. I do not see any reason to think it is due to anything else from any of our findings so far.

What did he weigh when he came into the hospital?

MISS PAINTER: There is no record.

DR. JONES: We know he has a lot of water in his abdomen and I believe it is fairly safe to say that the reason he has not lost more is because he has edema and ascites.

In the absence of any story of his being ill at the same time his sister was we can disregard the story of her jaundice.

No one else in the shop had a similar disease, and there is apparently no industrial hazard which could have given this picture. He has not been exposed to arsenic so far as his job is concerned. I do not see that we have any reason to think that his work is the cause of toxic cirrhosis. He has not been taking medicine such as arsenic for syphilis or other compounds such as carbon tetrachloride.

His always being weak is possibly of some interest. The story may go back a good deal further than six months.

We see petechial hemorrhages frequently with very pronounced jaundice. I should think those were simply evidence of the degree of liver damage and the duration of the disease. He may have petechial hemorrhage due to other disease. Leukemia with lack of marrow elements could perfectly well give us petechial hemorrhages. One can have leukemic infiltration of the liver, a clinical picture in no way different from this. But it is a very rare occurrence.

He may have had a preceding rheumatic endocarditis with involvement of the mitral valve. Certainly there is no heart failure. Whether he has mitral stenosis and regurgitation is of little importance in this diagnosis. It does not seem to me there is quite enough evidence for heart disease.

The slow shallow respiration is typical of these very toxic jaundice cases.

Dullness at the bases means in other words pulmonary edema and fluid in the pleural cavities. He may have pleural effusion coincident with liver disease.

I do not know why the knee and ankle jerks were not obtained. I do not believe it is significant.

In this particular case we have the story and physical findings of an intrahepatic process which goes back probably six months at least, culminating in severe jaundice, ascites and coma. I should think this man probably had cirrhosis of the liver and probably acute yellow atrophy as a terminal event, with the precipitating cause unknown.

The urinary findings are simply those associated with a very intense jaundice. Urobilinogen means one of two things. An excessive amount means in the first place that there is definite liver disturbance. We know that already. In the absence of infection or toxic damage one should get urobilinogen in the urine unless no bile is coming into the small bowel. Here one should properly assume that there is little diagnostic significance to this finding. In acute yellow atrophy the bile frequently can be expressed through the common duct perfectly well, although it is very thick and viscid.

The kidneys are not very much involved.

The icteric index naturally shows intense jaundice.

The fragility test is perfectly normal. This is not at all the picture of hemolytic jaundice.

The leukocytosis and the 95 per cent polymorphonuclear cells with anemia might make us think there is a possibility, a very remote possibility, that there may be some leukemic infiltration of the liver of the Hodgkin's type. I think, however, he has acute yellow atrophy on top of an old cirrhosis.

Why should he have low temperature? I think it is associated with the shock following several attacks of hematemesis. The vomiting of blood is entirely consistent with acute yellow atrophy.

I think the logical diagnoses are acute yellow atrophy on top of an old toxic cirrhosis, non-alcoholic in type. It is barely possible that he may have acute yellow atrophy alone, with no evidence at all of cirrhosis.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Acute yellow atrophy.

DR. CHESTER M. JONES' DIAGNOSES

Acute yellow atrophy, terminal.
Probably old toxic cirrhosis, non-alcoholic.

ANATOMIC DIAGNOSES

1. *Primary disease.*

Acute yellow atrophy of the liver.

2. *Secondary or terminal lesions.*

Esophageal varices with rupture and hemorrhage.
Anasarca.

PATHOLOGIC DISCUSSION

BY TRACY B. MALLORY, M.D.

This man had an acute yellow atrophy. The liver was very small, weighing slightly under 700 grams, and presented a rather unusual picture. In the extreme lower portion of the right lobe and also at the tip of the left lobe areas of functioning liver tissue were found, which were bright yellow, as is usual in the regenerated areas in cases of acute yellow atrophy. The remainder of the liver was flaccid, red, but more fibrous than normal. Microscopic examination showed not a liver cell in it. Three-fourths of the liver was of that character. This distribution of the regenerated areas is quite unusual, for ordinarily one finds islands of regeneration dotted throughout the atrophic tissue. Here the greater part of the liver was completely atrophic, and there were but two large islands of actively growing liver tissue.

He had esophageal varices. Considerable blood was found in the stomach at autopsy. He had not vomited all of it.

The other findings were simply those of edema and ascites.

DR. JONES: Do you think that there is any conjecture to be drawn? Is there any evidence as to whether he had cirrhosis before the acute yellow atrophy? Were the varicosities due to atrophy alone? If so the ascites and hematemesis could be explained even on this very short story.

DR. MALLORY: The whole thing could be explained by acute atrophy. We see a great many cases showing ascites.

DR. JONES: That is very interesting, because there is very little mention of ascites in text book articles on acute yellow atrophy.

A STUDENT: How do you account for the lessening of the jaundice?

DR. JONES: He was regenerating enough liver at the time to give him some functioning tissue. That very frequently happens. There is evidence here of regeneration. It is characteristic of acute yellow atrophy to have a regenerative process going along with the atrophic process. It is a question of which one is the more rapid. If regeneration is sufficient recovery will occur.

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EPIDEMIC ENCEPHALITIS

AN important book,* the result of a prolonged and careful survey of our present knowledge of epidemic encephalitis, has recently appeared. The survey, made under the direction of Dr. Josephine R. Neal of New York and a commission of physicians headed by Dr. William Darrach, limited its scope to the study of the etiology, treatment and epidemiology of the disease. Every claim suggested as the causative agent was looked into and this part of the survey covers over one hundred pages of the book. As is well known, a few research workers think a pleomorphic streptococcus is the etiological agent; a few consider a "toxic disturbance of the central nervous system" is the cause; a larger number point to a "filtrable virus, identical with or closely allied to the herpes virus"; most scientists think the cause of epidemic encephalitis, however, has not been demonstrated.

In the next section of the book many articles on treatment are abstracted. The commission concluded, with Hall, that "any reliable therapeusis, either for the disease or for its many after-results, does not exist."

The larger part of the volume is given over to a detailed and complete study of the epidemiology of the disease. The data have been collected from numerous sources and over 7,000 cases, reported from nearly every country in the world, have been analyzed. This section contains many admirable charts and tables. A few important points brought out may be mentioned: the earliest cases of the present great epidemic were reported in 1915 from Rumania; the most complete early accounts of the lethargic form, however, were reported by von Economo from Vienna in 1917; the disease then spread throughout the world, over 50,000 cases having been reported; the greatest incidences were in 1920 and in 1924; it is a disease of the winter months; persons of all ages are involved, male and female about equally; victims in all occupations and in many grades of social status are reported; the mortality, during an epidemic, is about 50%; the disease is not contagious, in the usual sense of the word, or, at least, feebly so; a few apparently authentic cases of contact infection are found in the literature.

The book, also, contains a short chapter on other types of encephalitis, including post-vaccinal encephalitis, a very extensive and well arranged bibliography and index.

Monographs of this type, the result of cooperation by a number of workers, are all too few. A far-sighted man, Dr. William John Matheson, saw the value of the work and financed the commission under whose direction the work was completed. Further studies from the same commission are expected; with the high standard set by the present volume, we can look for equally scientific results. Nothing new is added, in one sense of the word, to our knowledge of epidemic encephalitis by this report, but a foundation for future work has been securely laid. Dr. Matheson's funds have been profitably invested.

*Epidemic Encephalitis: Etiology, Epidemiology, Treatment. Report of a Survey by the Matheson Commission. New York, Columbia University Press, 1929.

THE RELIABILITY OF FROZEN SECTION DIAGNOSIS

IN a recent number of the *American Journal of Pathology*, MacCarty[1] cites the experience of the pathological laboratory of the Mayo Clinic where in the past twenty-three years 208,255 surgical specimens, of which 28,833 were carcinoma, were examined by this method. Any series as large as this shows that the method must be reliable in competent hands or its use could not have persisted.

The technique of making frozen sections is not difficult. The apparatus required is minimal. In fact, even the carbon dioxide tank is not a necessity as, in emergency, a simple tube of ethyl chloride may be used for freezing.

In addition, a rapid diagnosis may be obtained by the method of Terry where a free hand section of freshly fixed tissue stained by polychrome methylene blue, is examined by reflected light. This method can be used in many cases where it is not possible to have available the frozen section method and is apparently quite as reliable. The great difficulty is not in the making and staining of a good frozen section but in its interpretation.

In the medical curriculum naturally the students must be taught with fixed tissue. In the average hospital laboratory the routine is most easily planned for working with fixed tissues. Consequently the immediate diagnosis by frozen sections or by Terry's method has not received so much attention as it deserves.

Once one becomes familiar with frozen sections, however, it is relatively easy to establish the diagnosis. It is obviously of great importance to the patient to be able to have a pathologist tucked in a corner of the operating room or nearby who can take a portion of excised tissue and, while the patient is still under the anesthetic, in the course of three or four minutes return a diagnosis which should be accurate in the great majority of cases.

The value of such a procedure is obvious. Should a breast be amputated locally or should the radical operation be resorted to? In cancer of the lip, is it or is it not necessary to dissect the regional lymph nodes? Many such questions can be answered by examination of the frozen section. The time when malignancy can best be treated is the time when the clinical diagnosis is uncertain. With immediate pathological diagnosis available one can determine whether a radical or a conservative operation is necessary at the time that it will mean most to the patient. A case in which one is sure of malignancy from the clinical standpoint may frequently be a case which it is too late to treat satisfactorily.

There are, of course, times when the frozen section does not yield a positive diagnosis. Even when immediate operation is resorted to there is slight question as to the advisability of biopsy but if a nodule is removed entire, and the incision packed in gauze soaked in 2% formalin, there is no reason to fear this procedure.

REFERENCE

1 MacCarty, W. C.: Am. Jour. Path., 5:377, 1929.

THIS WEEK'S ISSUE

CONTAINS articles by the following named authors:

TROWBRIDGE, EDWARD H. A.B., M.D. Bowdoin College 1884. F.A.C.S. Formerly, Visiting Surgeon, Worcester City Hospital. Now, Consulting Surgeon, Worcester City Hospital. Surgeon-in-Chief, Harvard Private Hospital. Chairman, Worcester Board of Health. His subject is: "The Treatment of Abdominal Adhesions by the Use of the Electro-Surgical Knife." Page 1183. Address: Medical Arts Building, 36 Pleasant Street, Worcester, Mass.

ALLEN, FRANK G. Governor of the Commonwealth of Massachusetts. He presents an address delivered at the Hotel Somerset during the week of the Graduate Course in Cancer, 1929. Page 1195. Address: State House, Boston, Mass.

LELAND, GEORGE A. A.B., M.D. Harvard 1911. F.A.C.S. Instructor in Surgery, Harvard Medical School. Associate Surgeon, Massachusetts General Hospital. Visiting Surgeon, Collis P. Huntington Memorial Hospital and Palmer Memorial Hospital. His subject is: "Carcinoma of the Mouth and Lip." Page 1196. Address: 144 Commonwealth Avenue, Boston.

MCCARTHY, FRANCIS P. M.D. Tufts College Medical School 1905. Professor of Oral Medicine, Tufts College Dental School. Junior Visiting Physician, Department of Dermatology, Boston City Hospital. Visiting Pathologist, St. Elizabeth's Hospital and Quincy City Hospital. His subject is: "The Responsibility of the Dentist in Cancer of the Mouth." Page 1199. Address: 371 Commonwealth Avenue, Boston.

KAZANJIAN, V. H. D.M.D., M.D. Harvard 1921. F.A.C.S. Professor, Clinical Oral Surgery, Harvard. Visiting Oral and Plastic Surgeon, Boston City Hospital. Assistant Surgeon in Otolaryngology, Massachusetts Eye and Ear Infirmary. His subject is: "Tumors of the Mouth and Jaws." Page 1200. Address: 475 Commonwealth Avenue, Boston.

HERMAN, EDWARDS W. M.D. Harvard 1904. Associate Surgeon in Otolaryngology, Massachusetts Eye and Ear Infirmary. Laryngologist, Collis P. Huntington Memorial Hospital. Surgeon in Laryngology, Palmer Memorial Hospital. Member of the Tumor Clinic, Massachusetts General Hospital. Assistant in Laryngology, Harvard Medical School. His subject is: "Cancer of the Nose and Throat." Page 1201. Address: 483 Beacon Street, Boston, Mass.

MISCELLANY

IODINE RESEARCH PROGRAM

Since January 1, 1928, Mellon Institute of Industrial Research, Pittsburgh, Pa., has had in operation a Multiple Industrial Fellowship founded for the purpose of investigating the properties and uses of iodine. This Fellowship, which is sustained by the Iodine Educational Bureau, 64 Water Street, New York, N. Y., is headed by Dr. George M. Karns, formerly a member of the chemical faculty of the University of Illinois. All results of the Fellowship studies will be published.

Recently, through an additional appropriation

from the Fellowship donor, Mellon Institute, acting for the Iodine Fellowship, has made arrangements for the study of certain iodine problems in other institutions that have special facilities for such types of work. On October 7, 1929, a scholarship was founded at the Philadelphia College of Pharmacy and Science by a research grant from the Institute. This scholarship—which, for the college year 1929-30, will be held by Mr. L. F. Tice—will have for its aim a broad investigation of vehicles and solvents for iodine, especially for external use in medicine. A large number of new organic chemicals will be studied as solvents with the object of evolving, if possible, a more satisfactory preparation than the alcoholic tincture now in use. The research, for which a definite program has been laid down, will be supervised by Professor Charles H. LaWall with the advisory collaboration of other faculty members of the Philadelphia College of Pharmacy and Science and with the direct co-öperation of Dr. Karns. The investigational findings of the scholarship will be reported in the literature.

Another phase of the research program includes a grant made on September 26, 1929, to the Pennsylvania State College for a comprehensive investigation—under the direction of Professor E. B. Forbes of the Institute of Animal Nutrition—of the nutritional place and value of iodine in the feeding of live stock. Despite the large amount of work which has been done on the rôle of iodine metabolism, especially with reference to the thyroid, very little is known regarding the specific dietetic aspects of this element, particularly in the lower animals. Dr. Karns and his co-workers on the Iodine Fellowship of Mellon Institute are co-öperating closely with Dr. Forbes and his staff, mainly by preparing standardized feeds. The findings of this research also will be made available to the public, in accordance with the Iodine Educational Bureau's policy of disseminating to every one interested the results of all investigations made under its aegis.

Mellon Institute is giving consideration to the founding of a research scholarship in a medical school for the purpose of aiding in the solution of incompletely answered questions respecting the utility of iodine in internal medicine. A number of pharmacologists are aiding the Institute in determining a program for such pharmacodynamic inquiry.

THE SANITARY CONDITIONS OF BARBER SHOPS

The last legislature imposed the task of deciding whether barbers should be registered on the State Department of Public Health.

A survey of the barber shops has been made and 1675 physicians have answered requests for information. Only 40 persons claimed to have been infected in barber shops.

The Department has filed its report which in substance sets forth that all necessary regulations of barber shops may be provided by local boards of health.

THE SEMON LECTURE

Dr. Harris Peyton Mosher, Professor of Laryngology at the Harvard Medical School, Surgeon in Chief at the Massachusetts Eye and Ear Infirmary, delivered the Semon lecture at 5 o'clock December 5, 1929, before the Royal College of Physicians and Surgeons, London, England.

He was made an honorary member of the College and received the Semon Medal. The paper was on the pathology of the lower end of the oesophagus. Dr. Mosher has been doing interesting research work in this field for years.

The only other Semon lecture delivered by an American was the one by Dr. H. S. Birkett of Montreal in 1922.

THE SMALLPOX MENACE

During the week ending November 9, 1929 the Public Health Service reports that in 46 states and 97 cities there were reported seven hundred and twenty-six cases of smallpox. This is more than double the number reported in this same period last year.

DEPARTMENT OF COMMERCE WASHINGTON

Connecticut Mortality Statistics: 1928

Washington, D. C., November 15, 1929.—The Department of Commerce announces that the 1928 death rate for Connecticut was 1,076.1 per 100,000 population as compared with 1,024.3 in 1927.

Increases in rates (per 100,000 population) from those of the preceding year were from the following principal causes: diseases of the heart (219.1 to 228.4), cancer (105.1 to 107.5), diabetes mellitus (20.1 to 22.0), and tuberculosis, all forms (65.6 to 66.9). Increases were shown also for pneumonia, all forms (76.3 to 87.9), influenza (14.2 to 18.2), whooping cough (2.4 to 6.4), measles (1.5 to 4.2), meningococcus meningitis (0.8 to 1.4), diseases of the arteries, etc. (19.6 to 22.2), hernia, intestinal obstruction (8.5 to 10.3), and syphilis (9.0 to 9.9). The death rate from suicide increased from 11.4 to 14.2.

The death rate from all accidental causes increased from 66.7 to 74.1, the individual types of accidents showing the greatest increases being automobile accidents (excluding collisions with railroad trains and street cars) (20.0 to 24.4), railroad accidents (2.5 to 3.5), and accidental drowning (7.2 to 7.9).

Significant among the decreases in rates from 1927 to 1928 were those from diarrhea and enteritis, under 2 years (12.4 to 8.0), congenital malformations and diseases of early infancy (63.7 to 60.3), meningitis (nonepidemic) (3.4 to 1.7), diphtheria (5.9 to 5.1), and typhoid and paratyphoid fever (1.1 to 0.6). It is the first time in the history of the State that the rate from typhoid fever was less than 1 per 100,000 population.

Accidental burns (conflagration excepted) showed a decrease from 4.4 to 3.8.

The estimated population in 1928 was 1,667,000 and in 1927 was 1,636,000.

Cause of death	Deaths in Connecticut			
	Number		Rate per 100,000 estimated population	
	1928	1927	1928	1927
ALL causes 1/	17,938	16,757	1,076.1	1,034.3
Typhoid and paratyphoid fever	10	18	0.6	1.1
Malaria	2	1	0.1	0.1
Smallpox	-	-	-	-
Measles	70	24	4.2	1.5
Scarlet fever	20	23	1.2	1.4
Whooping cough	107	40	6.4	2.4
Diphtheria	85	96	5.1	5.9
Influenza	304	233	18.2	14.2
Dysentery	7	1	0.4	0.1
Erysipelas	51	44	3.1	2.7
Acute anterior poliomyelitis	14	16	0.8	1.0
Lethargic encephalitis	21	18	1.3	1.1
Meningococcus meningitis	23	13	1.4	0.8
Tuberculosis (all forms)	1,116	1,073	66.9	65.5
Of the respiratory system	996	940	59.7	57.5
Of the meninges, central nervous system	51	53	3.1	3.2
Other forms	69	80	4.1	4.9
Syphilis 2/	165	147	9.9	9.0
Cancer and other malignant tumors	1,792	1,719	107.5	105.1
Rheumatism	55	52	3.2	3.2
Pellagra	2	1	0.1	0.1
Diabetes mellitus	367	329	22.0	20.1
Meningitis (nonepidemic)	29	55	1.7	3.4
Cerebral hemorrhage and softening	1,501	1,463	90.0	89.4
Paralysis without specified cause	18	16	1.1	1.0
Diseases of the heart	3,808	3,585	228.4	219.1
Diseases of the arteries, atheroma, aneurysm, etc.	370	320	22.2	19.6
Bronchitis	95	84	5.7	5.1
Pneumonia (all forms)	1,465	1,248	87.9	76.3
Respiratory diseases other than bronchitis and pneumonia (all forms)	124	106	7.4	6.4
Diarrhea and enteritis	172	247	10.3	15.1
Diarrhea and enteritis (under 2 years)	133	203	8.0	12.4
Diarrhea and enteritis(2 years and over)	39	44	2.3	2.7
Appendicitis and typhlitis	200	193	12.0	11.8
Hernia, intestinal obstruction	172	139	10.3	8.5
Cirrhosis of the liver	112	112	6.7	6.8
Nephritis	1,397	1,362	83.8	83.3
Puerperal septicemia	47	47	2.8	2.9
Puerperal causes other than puerperal septicemia	103	113	6.2	6.9
Congenital malformations and diseases of early infancy	1,006	1,042	60.3	63.7
Suicide	236	186	14.2	11.4
Homicide	43	35	2.6	2.1
Accidental and unspecified external causes	1,236	1,092	74.1	66.7
Burns (conflagration excepted)	64	72	3.8	4.4
Accidental drowning	132	118	7.9	7.2
Accidental shooting	18	15	1.1	0.9
Accidental falls	223	212	13.4	13.0
Mine accidents	-	-	-	-
Machinery accidents	21	21	1.3	1.3
Railroad accidents	59	41	3.5	2.5
Collision with automobile	19	10	1.1	0.6
Other railroad accidents	40	31	2.4	1.9
Street-car accidents	25	26	1.5	1.6
Collision with automobile	8	6	0.5	0.4
Other street-car accidents	17	20	1.0	1.2
Automobile accidents(excluding collision with railroad trains and street cars)	407	327	24.4	20.0
Injuries by vehicles other than railroad trains,street cars,and automobiles 3/	21	22	1.3	1.3
Excessive heat (burns excepted)	12	7	0.7	0.4
Other external causes	254	231	15.2	14.1
All other defined causes	1,539	1,404	92.3	85.8
Unknown or ill-defined causes	56	61	3.4	3.7

1/ Exclusive of stillbirths.
2/ Includes tabes dorsalis (locomotor ataxia) and general paralysis of the insane.
3/ Includes airplane, balloon, and motor-cycle accidents.

COMPARISON OF DISEASE INCIDENCE IN CONNECTICUT
WITH 1928 AND SEVEN YEAR AVERAGE MONTH
ENDING NOVEMBER 16, 1929

DISEASES	1929					1928			
	Wk. ending Oct. 26	Wk. ending Nov. 2	Wk. ending Nov. 9	Wk. ending Nov. 16	Average cases reported for week corresponding to Nov. 16 for past seven years.	Wk. ending Oct. 27	Wk. ending Nov. 3	Wk. ending Nov. 10	Wk. ending Nov. 17
Cerebrospinal Men.	1	1	3	-	-	-	-	-	-
Chickenpox	82	104	145	151	101	59	75	51	97
Conjunctivitis Inf.	-	-	-	-	1	-	-	-	-
Diphtheria	24	19	19	28	48	18	28	27	25
Dysentery Bacillary	-	1	-	-	-	-	-	-	-
Encephalitis Epid.	-	2	-	1	1	-	1	-	2
German Measles	2	1	2	3	3	1	3	-	4
Influenza	3	5	1	6	5	3	3	1	2
Malaria	-	-	-	-	3	-	-	-	-
Measles	2	2	3	2	89	48	42	25	115
Mumps	12	55	16	19	25	18	21	57	48
Paratyphoid Fever	-	1	-	4	-	-	-	-	-
Pneumonia (Broncho)*	21	16	22	13	21	16	13	15	20
Pneumonia (Lobar)	25	20	26	15	30	19	19	13	34
Poliomyelitis	1	-	1	1	2	6	-	1	1
Scarlet Fever	33	36	57	52	70	22	25	24	36
Septic Sore Throat	1	-	1	3	3	3	1	1	4
Tetanus	-	-	-	-	-	-	1	-	-
Trichinosis	-	-	-	-	-	-	-	2	-
Tuberculosis (Pul.)	31	24	15	16	30	16	40	37	18
Tuberculosis (O.F.)	5	1	1	2	3	1	-	3	-
Typhoid Fever	3	-	3	2	3	1	-	2	-
Typhus Fever	-	1	-	-	-	-	-	-	-
Undulant Fever**	-	1	-	1	-	-	-	-	1
Whooping Cough	36	27	27	19	64	36	43	24	56
Gonorrhoea	33	28	46	19	25	60	25	31	58
Syphilis	28	56	84	35	30	48	26	52	64

* Made reportable January 1, 1925.
** Made reportable July 1, 1928.

REMARKS: No cases of Asiatic cholera, Glanders, plague, rabies in humans and Yellow fever during the past seven years.

A VERDICT FOR THE DEFENDANT

In re: Alice V. Walsh, daughter of John F. Walsh, now 4½ yrs. old, vs. Dr. Charles Liebman.

Doctor Liebman gave this baby, when six months old, two treatments for thymus gland. The guardians of the child claimed an X-ray burn, which proved to be nothing but milium, or white hair follicle. They brought suit in the amount of $25,000, which was tried in the Suffolk Court, before Judge Lourie, in November of this year.

Doctor Samuel Adams Cohen of 130 West 86th St., New York, a Tufts 1916 man, testified that it was an X-ray burn and that the child would probably die by the time she was twenty years old from cancer as a result of the burn.

Doctors George Holmes, Fred W. O'Brien, J. Harper Blaisdell and Allan Greenwood all testified that there was no burn. At the end of seven days the jury brought in a verdict for the defendant.

LEPROSY IN NEW YORK CITY

The Department of Health of New York City in a recent bulletin reports the discovery of leprosy in that city quite constantly.

On January 1, 1928 there were thirty-three lepers on the Department's list. Seven new cases were reported during 1928 and two in 1929.

The reassuring comment appears in the report that "there is little evidence that in this part of the United States infection with leprosy is to be feared".

The transmission of leprosy is not well understood at the present time although the appearance and behavior of the disease are matters of common knowledge.

The increase in the number of reported cures or arrested cases is encouraging.

WEEKLY HEALTH INDEX

Telegraphic returns from 64 cities with a total population of thirty million for the week ending November 30, indicate a mortality rate of 12.3 as against a rate of 12.6 for the corresponding week of last year. The highest rate (26.7) appears for Memphis, Tenn., and the lowest (8.1) for Camden, N. J. The highest infant mortality rate (129) appears for New Bedford, Mass., and the lowest for Indianapolis, Ind., Schenectady, N. Y., and Somerville, Mass., which reported no infant mortality.

The annual rate for 64 cities is 12.9 for the forty-eight weeks of 1929, as against a rate of 12.8 for the corresponding weeks of 1928.

NEWS OF TUFTS COLLEGE MEDICAL SCHOOL

Dr. Frederick L. Good, Professor of Obstetrics at Tufts Medical School and twenty undergraduates were admitted to membership in the Phi Chi Medical Fraternity at the Initiation and Annual Banquet in the Hotel Kenmore on Wednesday evening, December 4. A large number of alumni members were present. The speakers were Dr. Louis E. Phaneuf, Professor of Gynecology, Dr. Edward M. Hodgkins, Assistant Professor of Surgery, and Dr. Frederick L. Good. Other faculty members who addressed the gathering were Dr. L. H. O. Goddu and Dr. George W. Papen of the Department of Surgery, Dr. William T. Haley of the Otolaryngology Department and Dr. William P. Boardman, Assistant Professor of Dermatology.

Dr. Phaneuf stressed the advantages of the medical curriculum at Tufts in the development of a broad foundation on which to build a general practice, or to become a specialist without losing the proper relationship between the specialty and the patient's general health. He anticipates with interest the achievement of the plans for the new Health Center to be organized at the Boston Dispensary site.

Dr. Hodgkins talked on Alumni Loyalty and the power of a united alumni body in the advancement of the school's progress.

Dr. Good spoke on Fraternal Spirit in School, in the Hospitals and in Practice, as the means of assisting those who are anxious to succeed to serve, and urged co-öperative spirit for the common good.

The initiates were:

1931—L. B. Ainsworth, M. E. Johnson, J. A. Maroney, J. A. Maguire, R. W. Pearson.

1932—R. J. Doyle, E. H. Joy, A. J. Kotarski, W. F. Leighton, J. A. Lundy, J. M. McCarthy, J. P. McManus, R. Phillips, A. P. Shinney, A. A. Thibodeau, G. R. Allen.

1933—G. B. Chisholm, A. B. Lundquist, G. O. Tapley, L. M. Wilcox.

Phi Lambda Kappa Fraternity of Tufts Medical School will give a formal dance in honor of its pledgees at the fraternity house, 71 Carleton Street, on Friday, December 13. Music will be furnished by Gorney's Orchestra.

The Faculty of Tufts College Medical School tendered a reception to the Freshman Class on Tuesday evening, December 10. A buffet supper was served. Short addresses followed the supper, after which an opportunity was given for the Faculty to become acquainted with the students.

Dr. Edward Edwards, one of the three interns at the City Hospital who have been suffering from septic poisoning, was removed from the danger list December 5. The condition of Dr. Alexander Aitken is greatly improved, and he is up and around the hospital attending to his patients. Dr. Edwards is a graduate of Tufts Medical School in the Class of 1928, as also was Dr. Aitken.

CORRESPONDENCE

THE RE-REGISTRATION OF PHYSICIANS

The Commonwealth of Massachusetts
Department of Civil Service and Registration
Board of Registration in Medicine
State House, Boston

December 3, 1929.

Editor, NEW ENGLAND JOURNAL OF MEDICINE:

Preliminary to possible legislation in regard to the relisting of physicians in Massachusetts, the Board of Registration in Medicine has been making a survey of the physicians in active practice in Massachusetts as shown by professional listings from medical and telephone directories, and have checked these with the reports received from the town and city clerks in Massachusetts.

In carrying this work as far as our somewhat nonclastic budget would permit, we found that registered physicians so listed number 6090. In checking these with the town and city clerk reports, we find that of this number, 4944 physicians have complied with the law (G. L. Chapter 112, Section 8) a copy of which is as follows:

The Commonwealth of Massachusetts
Board of Registration in Medicine

REGISTRATION OF CERTIFICATE

General Laws, Chapter 112.

Section 8. No person shall enter upon, or continue in, the practice of medicine within the commonwealth until he has presented to the clerk of the town where he has, or intends to have, an office or his usual place of business, his certificate of registration as

a physician in the commonwealth, or, if it is lost, a certified statement issued by the board, setting forth all the material facts in the original certificate, and a fee of twenty-five cents. Thereupon the clerk shall record the name of the owner of said certificate or certified statement, together with the date of record, upon blanks approved by the board, said blanks to be so arranged that a duplicate carbon copy shall be made at the time of the original record. He shall keep the original as a part of his official records and it shall be open to public inspection. He shall, within twenty-four hours after such recording, forward the duplicate to the board. Whoever practices or attempts to practice medicine without complying with this section or whoever submits to a town clerk a false or fraudulent certificate or certified statement, shall be punished by a fine of not less than five nor more than one hundred dollars; any town clerk who refuses or neglects to comply with this section shall be punished by a fine of not less than five nor more than ten dollars.

This shows that as far as our records are concerned, there are 1146 registered physicians now practicing in Massachusetts who have not complied with this law.

The Board would appreciate any publicity you can give this matter as when this law went into effect in 1917, it was just before the United States had entered the World War. At that time many physicians were in Europe with the various units already established so that it is very possible the publicity given this matter at the time of the passage of this act was more or less in the background.

It is expected that during the coming legislative session measures will be introduced to require a relisting of registered physicians in active practice in Massachusetts (this will not require annual registration) as well as some possible change in the above act so that each time a physician changes his business address in the cities of over ten thousand inhabitants, a report shall again be made to the city clerk.

In regard to the quoted law (G. L. Chapter 112, Section 8) the Acting Attorney General of Massachusetts, under date of July 16, 1929, has given us a written opinion in which he states as follows:

> "The statute, in my opinion, requires the certificate to be recorded in each town in which the physician establishes an office. There seems nothing in the statute to require a new record where the physician takes a new business address within the same town."

Very truly yours,

DR. FRANK M. VAUGHAN, *Secretary.*

"INDOLENT FEVER"

The Commonwealth of Massachusetts
Department of Public Health
State House, Boston

December 2, 1929.

Editor,
NEW ENGLAND JOURNAL OF MEDICINE:

Recently with a specimen of blood we received a request "to give agglutination test for indolent fever". Should this be classified as an occupational disease?

Yours truly,
GEORGE H. BIGELOW, M.D.,
Commissioner of Public Health.

ARTICLES ACCEPTED BY THE AMERICAN MEDICAL ASSOCIATION, COUNCIL ON PHARMACY AND CHEMISTRY

Managing Editor,
THE NEW ENGLAND JOURNAL OF MEDICINE.

In addition to the articles enumerated in our letter of October 25, the following have been accepted:

Curdolac Food Co.
- Curdolac Soya Flour
- Curdolac Casein-Bran Improved Flour
- Curdolac Soya-Bran Flour
- Curdolac Breakfast Cereal
- Curdolac Casein Compound
- Curdolac Wheat-Soya Flour
- Curdolac Soya-Cereal Johnny Cake Flour
- Curdolac Soya-Bran Breakfast Food

Cutter Laboratory
- Ampoule Solution Silver Nitrate, 1 per cent.
- Typhoid Paratyphoid Prophylactic, hospital size package
- Polyanaerobic Antitoxin

De Pree Chemical Co.
- Sulpharsphenamine-De Pree, 0.5 Gm. Ampules
- Sulpharsphenamine-De Pree, 0.9 Gm. Ampules

H. K. Mulford Co.
- Gelatin Compound Phenolized—Mulford
- Diphtheria Toxoid—Mulford, 30 cc. vial
- Erysipelas Streptococcus Antitoxin, Concentrated, 10 cc. syringe
- Typho-Bacterin Mixed (Triple Vaccine TAB), thirty 1 cc. vial package
- Typho-Serobacterin-Mulford (Sensitized Typhoid Vaccine), 3 syringe package
- Normal Horse Serum without Preservative
- Alder Pollen Extract—Mulford; Alfalfa Pollen Extract—Mulford; Annual Sage Pollen Extract—Mulford; Apple Pollen Extract—Mulford; Aster Pollen Extract—Mulford; Blue Beech Pollen Extract—Mulford; Boneset Pollen Extract—Mulford; Brown Grass Pollen Extract—Mulford; Burning Bush Pollen Extract—Mulford; Burweed Marsh Elder Pollen Extract—Mulford; Buttercup Pollen Extract—Mulford; California Mugwort Pollen Extract—Mulford; Careless Weed

Pollen Extract—Mulford; Cedar Tree Pollen Extract—Mulford; Clover Pollen Extract—Mulford; Crab Grass Pollen Extract—Mulford; Dahlia Pollen Extract—Mulford; Dragon Sage Pollen Extract—Mulford; Elm Tree Pollen Extract—Mulford; English Plantain Pollen Extract—Mulford; Fescue Pollen Extract—Mulford; Golden Glow Pollen Extract—Mulford; Hickory Tree Pollen Extract—Mulford; Milo Maize Pollen Extract—Mulford; Mock Orange Pollen Extract—Mulford; Oat Pollen Extract—Mulford; Olive Pollen Extract—Mulford; Pecan Tree Pollen Extract—Mulford; Pine Tree Pollen Extract—Mulford; Poverty Weed Pollen Extract—Mulford; Prairie Grass Pollen Extract—Mulford; Privet Pollen Extract—Mulford; Quack Grass Pollen Extract—Mulford; Rabbit Brush Pollen Extract—Mulford; Rose Pollen Extract—Mulford; Salt Bush Pollen Extract—Mulford; Shad Scale Pollen Extract—Mulford; Sheep Sorrel Pollen Extract—Mulford; Slender Ragweed Pollen Extract—Mulford; Spring Amaranth Pollen Extract—Mulford; Sudan Grass Pollen Extract—Mulford; Velvet Grass Pollen Extract—Mulford; Western Giant Ragweed Pollen Extract—Mulford; Wheat Pollen Extract—Mulford; Wild Oats Pollen Extract—Mulford; Willow Tree Pollen Extract—Mulford; Winter Grass Pollen Extract—Mulford; Yellow Foxtail Grass Pollen Extract—Mulford.

National Drug Co.
Diphtheria Toxoid

Thompson's Malted Milk Co., Inc.
Thompson's Maltose and Dextrin

Yours truly,
W. A. PUCKNER, *Secretary*,
Council on Pharmacy and Chemistry.

RECENT DEATHS

CHANDLER—DR. THOMAS EVANS CHANDLER, Associate Professor of Surgery in Boston University School of Medicine, died at his home in Brookline, December 2, 1929, at the age of 58, of heart disease.

A graduate of the Boston University School of Medicine in 1900 he was a member of the American College of Surgeons and a Fellow of the American Medical Association and of the Massachusetts Medical Society. Dr. Chandler was a native of Indianapolis but had lived here since his graduation from the medical school. During the World War he served, with the rank of major, attached to base hospital 44. He is survived by his widow and three sons.

CLIFF—A long time general practitioner of the South End of Boston has been called to his last reward in the person of DR. LEANDER ALBERT CLIFF, who died at his home on Shawmut Avenue, December 1, 1929, at the age of 82, after practising his profession for 55 years.

The son of Nelson A. and Rhoda Estey Cliff he was born at Fredericton, New Brunswick, August 4, 1847. He received an A.B. from the College of New Brunswick in 1870 and, coming to Boston entered Harvard Medical School where he took an M.D. in 1874, in the same class as E. M. Buckingham, F. H. Davenport and Thomas Morgan Rotch when he had served as house officer at the Boston City Hospital. Dr. Cliff upheld the standards of medicine he had acquired at the medical school and ministered to a large practice. He became a Fellow of the Massachusetts Medical Society in 1875 and was also a Fellow of the American Medical Association.

Dr. Cliff married Maribel Yerxa in 1873 and they had six children, one of them being Dr. Frederica L. Cliff who has practised with her father, and is also a member of the State Medical Society.

WALLACE—DR. JOHN WALLACE, for thirty years a practitioner of Roxbury, died at his home there December 2, 1929 aged 59. He was a native of Ireland where he was educated, graduating from Queen's College, Belfast. He was a licentiate of the Royal College of Physicians, Edinburgh, of the Royal College of Surgeons, Edinburgh and of the Royal Faculty of Physicians and Surgeons of Glasgow. After settling in Roxbury in 1897 he did a general practice, devoting himself to surgery of late years. His memberships included the American Medical Association, the Massachusetts Medical Society, the Shriners and the Elks. He is survived by his widow, and by four children.

OBITUARY

IN MEMORIAM

To say little and do much seemed to have been his motto, and those who knew him best would have him so remembered. That physician loved, honored, respected by all seemed best to have exemplified Stevenson's beautiful passage in his Dedication to Underwoods: Generosity, tact and discretion — all were his, though he would have erased these words to write in "humble".

To the memory of the late Dr. Edward Norton Libby,

Teacher—Advisor—Friend,

on behalf of his many friends and associates in the Norfolk District Medical Society.

NOTICE

NOTICE OF EXAMINATION FOR ENTRANCE INTO THE REGULAR CORPS OF THE UNITED STATES PUBLIC HEALTH SERVICE

Examination of candidates for commission as Assistant Surgeon in the Regular Corps of the U. S. Public Health Service will be held at the following-named places on the dates specified:

At Washington, D. C.,	January 27, 1930.
At Chicago, Ill.,	January 27, 1930.

At New Orleans, La., January 27, 1930.
At San Francisco, Cal., January 27, 1930.

Candidates must be twenty-three years and not over thirty-two years of age. They must have been graduated in medicine at a reputable medical college, and have had one year's hospital experience or two years' professional practice. They must satisfactorily pass oral, written, and clinical tests before a board of medical officers, and undergo a thorough physical examination.

Successful candidates will be recommended for appointment by the President, with the advice and consent of the Senate.

Request for information or permission to take this examination should be addressed to the Surgeon General, U. S. Public Health Service, Washington, D. C.

H. S. CUMMING, *Surgeon General.*

REPORTS AND NOTICES OF MEETINGS

SPIELMEYER SPEAKS ON MENTAL DISEASES

Mental diseases are increasing in all parts of the world and the only hope of meeting this problem lies in the co-ördinated study of human beings from the mental, physical and social points of view, according to an opinion expressed by Dr. W. Spielmeyer, head of the Psychiatric Research Institute in Munich and one of the European authorities on diseases of the nervous system.

A keen interest in the type of work to be done by the Human Welfare Group at Yale University has led Dr. Spielmeyer to spend a month as the guest of the Yale School of Medicine. Here he will deliver a series of three lectures and will aid in organizing the division of neuro-pathology.

Dr. Spielmeyer said that it is of highest importance that we should study mental diseases from the point of view of structural and functional changes of the nervous system and the human organism as a whole, but we must recognize that only limited benefits can come from treating those who are the victims of psychoses. He does not believe that much will be accomplished in the quantitative sense for the mentally diseased by the use of surgical, chemical or any other therapeutic methods.

He continued: "If we would really check the alarming increase in nervous ailments we must begin treatment before disease sets in. We must have a more thorough knowledge of life as it is; in other words, we must seek to understand the interrelationships of mental, physical and social factors in the normal individual's conduct so that we can tell him exactly where danger lies. This is simply the principle of preventive medicine.

"In the attempt at Yale University to bring together various arts and sciences for a concerted study of human life, we German neurologists and psychiatrists see great possibilities. Nowhere else has a plan of such scope and promise been put into practice and we shall watch for the results with the deepest interest."

Dr. Spielmeyer succeeded the late Emil Kraepelin as head of the Psychiatric Research Institute in Munich. This Institute was organized during the last years of the World War. It is now housed in new buildings provided by the Rockefeller Foundation and is a member of the great Kaiser Wilhelm Institute for psychiatric research. Mental diseases are studied here in their relations to structure and function of the nervous system, and from the chemical, serological and genealogical viewpoints. There are at present 100 beds for patients, to which about 1,000 patients are admitted annually. The Dispensary is visited by about 3000 persons annually, most of whom are only slightly abnormal.

The subjects of Dr. Spielmeyer's lectures, at Yale, are the relationship of brain changes to vasomotor disturbances; encephalitis in children; and the significance of local factors in brain lesions.

He was scheduled to give an address at the dedicatory ceremonies for the New York State Psychiatric Institute at the Medical Center early in December. His principal address in this country will be given later in the month before the association for Research in Nervous and Mental Diseases, at New York, where he will discuss the anatomical findings following epileptic fits. Other addresses will be given in Boston, Iowa City, Minneapolis, and Chicago. A number of leading neurologists in these and other places have been students of Dr. Spielmeyer in Munich.

THE HARVARD MEDICAL SOCIETY

The Harvard Medical Society held a meeting at the Peter Bent Brigham Hospital Amphitheatre on Tuesday evening, Nov. 26, 1929. After the presentation of cases Dr. H. A. Christian introduced the speakers of the evening.

The first case was presented by Dr. Hahn of the medical service. The patient was a 64 year old Danish machinist who entered the hospital complaining of frequency and nocturia. Past and family histories were unimportant. For three years he has had nocturia increasing slightly, accompanied during the last six months by increasing thirst, frequency, and loss of weight. Physical examination showed generalized skin discoloration, a negative chest, and a palpable mass in the right upper quadrant extending to the umbilicus. There were superficial veins on the abdomen. Clinical pathology showed a marked secondary anemia and a large amount of sugar in the urine. Blood sugar was 212. He responded well to insulin. Biopsy of the skin of the abdomen showed it to be much lighter colored than the skin of his palms and hands, and a positive test with iodine was obtained. He was shown as a case of haemochromatosis, which was interesting because of his association with brass and copper in his work.

The second case was presented by Dr. Boyd. The patient was a 54 year old man who entered the

hospital complaining of increasing constipation for 2½ years. Past history revealed that he had typhoid when a child, syphilis at 18, and various attacks of gonorrhea. Six years ago transient swelling of his joints was relieved by salvarsan. He had had no diarrhea, and noticed no blood in his stools. In the past six weeks he had noticed occasional attacks of nausea and vomiting. Physical examination showed a thin, emaciated, bloodless appearing individual with fixed pupils and absent knee jerks. Clinical pathology showed a red count of 2,500,000, white count of 9000, occult blood in vomitus and stools, temperature between 100° and 103°, almost complete gastric achlorhydria, and a negative barium enema. G. I. series showed a stomach with an area of rigidity in the antrum with slight filling defects. The white count increased to 26000 and the temperature went up. The differential diagnosis was either carcinoma or lues. Dr. Cheever refused to operate with such a high temperature and the therapeutic test for syphilis will be tried.

The first paper on "Foreign bodies in upper respiratory passages and oesophagus" was presented by Dr. Lyman Richards, Associate in Otolaryngology at the hospital. The work was done at the Brigham and Children's Hospitals. Dr. Richards pointed out that experience is very important in handling such cases. This skill is acquired on animals. The surgeon may be handicapped by the lack of a permanent operating team. The diagnoses of foreign bodies are increasing and fewer pulmonary infections follow because of early removal.

There are several false ideas about foreign bodies. First, such cases are rarely emergencies. They should be studied by the medical department, the X-ray, and the bronchoscope. Second, the procedures are not more dangerous than many others. While they should be done with great care, they are not essentially dangerous. In a child especially, a cough, fever, and unexplained illness should rouse a suspicion of a foreign body.

Foreign bodies are classified as opaque and translucent. Bodies opaque to X-rays are usually easily detected. Some give few signs and good health may prevail. Non-opaque foreign bodies are hard to locate. They give an obstructive empyema acting like a ball valve. Pictures taken at inspiration and expiration will tell in which side the foreign body is to be found. Immense reactions may exist around foreign bodies, but this usually clears. The use of lipiodol is helpful, but accumulated masses may be mistaken for abscesses.

The anaesthetic for bronchoscopy is either local or ether. Rectal ether has been used, but is not satisfactory. Sodium amytal offers a possible anaesthetic adjunct. The complications of a foreign body are (1) partial removal; (2) failure of removal; (3) laryngeal obstruction; (4) mediastinitis; (5) subcutaneous emphysema of unexplained origin disappearing upon removal of the foreign body.

Oesophagoscopy opens another field. The removal of such things as safety pins and the dilatation of strictures are the chief procedures here.

Dr. Richards concluded his talk by showing the varied and strange things he had removed.

Dr. Clifford L. Derick presented the second paper on "Skin reactions of patients and normal individuals to protein extracts of streptococci." The report was on work done with Dr. Marshall Fulton at the Peter Bent Brigham Hospital last year. The survey included 670 individuals with 516 cases of organic disease of which 46 were rheumatic fever patients at the House of Good Samaritan. The series also included feeding and orthopedic cases at the Children's and Infants' Hospitals. For controls the resident staff of Peter Bent Brigham Hospital, members of the senior class at the Harvard Medical School and patients with no demonstrable organic diseases were tested. The materials used, nucleoprotein portions of hemolytic green-producing, indifferent streptococci, and baker's yeast, were made fresh every month and tested aerobically and anaerobically. The dose was 1/1000 mg. of haemolytic streptococcus nucleoprotein and 3/1000 mg. of the others. This difference in strength is not understood. The reaction in positive cases appears in 24-48 hours and is of the tuberculin type. The reaction varied from an erythema to a large indurated wheal. No suppuration or sloughing was ever obtained.

Results showed that up to five years 4.9% gave a mild reaction. From five years on 45-70% showed a positive reaction. Of the positive reactions obtained in disease groups rheumatic fever showed 88% positive, gall-bladder cases 87%, gastric ulcer 77%, tonsillitis 75%, diabetes 75%, heterogeneous 62%, normals 56%.

Dr. Derick concluded that since most individuals are sensitive to these nucleoprotein portions of streptococci after 5 years of age this allergic state is probably an acquired one. He pointed out that if this high incidence of allergy is of any etiological significance, it is too early in the work to judge.

THE YALE MEDICAL SOCIETY

(Continued from page 1181, issue of December 5.)

Dr. John P. Peters, a professor of medicine at Yale Medical School discussed "The Effect of Protein and Phosphorus upon the Concentration of Calcium in Blood Serum." It has been known that the elevation of the concentration of inorganic phosphate in the blood by injections of sodium phosphate was attended by reduction of the serum calcium. Subsequent clinical and experimental studies have left no doubt that, other things being equal, the concentration of calcium in the serum and body fluids is dependent upon the level of inorganic phosphate in these media. Others from a study of the relation of calcium to protein in sera and transudates from patients with nephritis and heart disease concluded that the amount of protein in body media also had an important influence upon the concentration of calcium in these media. It has also been shown that proteins increase the solubility of calcium in true and artificial sera, probably by the formation of unionized or only slightly ionized Ca-protein complexes.

It follows from these studies that abnormalities of the calcium concentration of the serum can be interpreted with accuracy only if phosphate and protein have been determined simultaneously. Low serum calcium can be considered as evidence of an essential defect of calcium metabolism only if phosphate and protein are normal. If the level of phosphorus or protein is disturbed it is, at present, impossible to estimate the effect of such disturbance on the calcium concentration. The purpose of the present paper is to evaluate the relative effects of phosphorus and protein on serum calcium and to offer standards for the analysis of the causes of abnormal serum calcium concentrations.

It has been the custom in the medical laboratory of the New Haven Hospital to analyze serum for inorganic phosphate and protein as well as calcium whenever determinations of the latter were required. As a result of this custom a large number of simultaneous determinations of all three components have been made. Proteins were determined by a macro-Kjeldahl technique, calcium by the method of Kramer and Tisdall, phosphorus by the procedure of Benedict and Theis. All blood was withdrawn without stasis and treated anaerobically until the serum had been separated. These precautions were observed to prevent exchanges of fluid between cells and serum as a result of altering the CO_2 and oxygen tensions of the blood. No anticoagulants were added to the blood samples. Serum was separated by centrifugalization and removed from the cells as soon as possible after the blood had been withdrawn. In all, seventy-three observations were made on thirty-one patients with diseases which are not generally believed to have any direct effect on calcium metabolism: chronic nephritis with uremia, chronic nephritis with edema or the so-called nephrosis, acute nephritis, fatal poisoning with bichloride of mercury, pregnancy toxemia of the nephrosis type, heart failure, diabetes, cholelithiasis with obstruction of common duct, intestinal obstruction, and pyloric obstruction.

The effect of protein alone on calcium was first determined by an analysis of all those observations in which P. was less than 5 mg. per 100 c.c. The determinations were divided into groups according to the serum protein level and average protein, phosphorus, and calcium concentrations in each group were estimated. There is sufficient uniformity in the phosphorus values of the different groups to permit one to treat the group averages as if P. were constant. The reasonable assumption, that the extent of the Ca-protein combination will bear a linear relation to the amounts of Ca and protein present, was confirmed.

Calcium can be calculated with an average error of about ± 0.7 mg. per 100 c.c. In eight instances the discrepancy between calculated and observed values exceed 2.0 mg. per 100 c.c. That the agreement should not be better is not surprising when one considers the great variability of the material investigated. In general the greatest discrepancies were observed in uremic cases in which P. was extremely high. As patients in this condition almost always exhibit profound disturbances in the pH of the serum and in other electrolytes than those which have been here considered it is not surprising that this should be the case. It has been shown that the solubility of Ca in serum depends to some extent on both pH and total ionic strength. The quantitative effect of these factors in serum has not yet been accurately established and the data are not sufficiently extensive to permit their evaluation. It is reasonable to believe that sufficient observations have been employed for the present analysis to obliterate for the most part the distorting influences of these inestimable factors.

Much more significant is the fact that both phosphate and proteins have an indubitable influence upon serum calcium. The obvious inference is that the physiological or pathological meaning of abnormalities of serum calcium cannot be evaluated unless inorganic phosphate and protein are determined simultaneously, and then only by the aid of some standard. The value of such a standard is, perhaps, best illustrated by clinical examples. It has been demonstrated that insulin lowers the serum inorganic phosphate of patients with severe diabetes and hyperglycemia. At the same time calcium may change. Whether this change is due to demobilization of calcium to form some phosphate compound or is simply secondary to alterations of protein and phosphate, has not been determined. Some light may be thrown on the question by observations on a case of diabetes. At the time of the first observation the patient had acidosis, with the usual dehydration and extreme hyperglycemia. Calcium was also high. Although calcium fell with recovery the change was only of the degree that would be expected as a result of the reduction of proteins that occurred as the state of dehydration was overcome. This is indicated by the fact that the difference between observed and calculated values of calcium on the two occasions were identical.

Another patient had a bilateral infection of the kidneys. She also had fractures of both femoral necks and some rarefaction of almost all of the bones. Whatever may have been the underlying etiological factors, it was evident that there was a disturbance of the calcium metabolism that interfered with proper calcification of the bones. On three successive hospital admissions (the last because of a fracture of the right scapula), her calcium was low in proportion to protein and phosphorus. Each time under treatment, including heliotherapy and cod liver oil (and, on the last occasion, calcium lactate) the discrepancy between observed and calculated serum calcium values diminished, calcium rising without a comparable change in protein and phosphorus. It is not improbable that in other cases of kidney disease, when calcium is found extremely low without important protein or phosphorus abnormalities, the calcium reductions are due to disturbances of calcium metabolism and the mechanism of calcification and not to the renal disease itself. Such hypocalcemias are usually encountered in children who are more prone to such disorders of calcification than adults.

In general this investigation showed that the concentration of calcium in the serum varies directly with the concentration of protein and inversely with the concentration of inorganic phosphorus. It is, therefore, impossible to interpret serum calcium vari-

ations accurately unless protein and inorganic phosphorus are simultaneously determined. (2) One hundred and eighteen simultaneous observations of serum calcium, inorganic phosphorus, and protein from this laboratory and from a previous report of others have been analyzed to evaluate the relative effects of protein and phosphorus on serum calcium. The sera were obtained from patients, chiefly with nephritis, in whom there was no reason to suspect the presence of a true defect in calcium metabolism. (3) The relation of the three components in this series is defined by the equation, $Ca = -0.255\ P + 0.566$ protein $+ 7$. An alignment chart has been constructed to conform with this equation.

Leroy U. Gardner, M.D., Director of Saranac Laboratory, Trudeau Sanatorium, Saranac Lake, N. Y., discussed, "Experimental Tuberculosis as Influenced by Dust Inhalation." Dr. Soper, presiding officer of the meeting, paid tribute to Dr. Gardner in saying that the speaker probably knows more than anyone about dust as a hazard in industry. Dr. Gardner first studied the effects of granite dust, marble dust, carborundum dust, quartz dust (silicon dioxide), asbestos dust, and coal dust on normal animals and on humans who were exposed to such dusts.

X-rays in patients suffering from inhalation of granite dust showed a widening of the mediastinal shadow and small mottlings throughout the lung field. Pathological sections from the lungs of the experimental animals show exudative and proliferative phenomena about the collections of dust. It took two years to produce a nodular lesion after the inhalation of granite dust by guinea pigs. Carborundum dust caused an enlargement of the tracheal-bronchial lymph nodes and the formation of the so-called pseudo tubercles.

Quartz dust caused a greater enlargement of the tracheal-bronchial lymph nodes and a greater number of pseudo tubercles in the lung.

Marble dust caused a slighter enlargement of the tracheal-bronchial lymph nodes and a lesser number of pseudo tubercles in the lung.

The study of asbestos inhalation may be of aid in the legal difficulties that have risen over cases of "industrial asbestosis," especially in England. X-ray plates of a patient who was exposed to asbestos dust for fourteen years showed a widening of the mediastinum, fuzziness above the diaphragm and nodular enlargement at the hiluses. Autopsies on experimental animals showed a slight enlargement of the tracheal-bronchial lymph nodes. Microscopically there were few areas that showed an invasion by giant cells and lymphocytes. There were no areas of fibrosis. So called curious bodies which are pathognomonic of asbestosis were seen scattered throughout the lung.

Dr. Gardner then discussed the effect of all the above dusts on tuberculosis. Tuberculosis was experimentally produced by the inhalation of an attenuated strain, the R form of tubercle bacilli. This strain produces a change in lymphoid tissue, especially. It infects the lung parenchyma if it is inhaled for six to eight hours.

Quartz dust is potent in spreading active and so-called healed tuberculous lesions. Carborundum and granite dust are less potent. Coal dust and marble dust caused no spread of tuberculosis. The lighting up of the tuberculous lesions may be explained by some specific chemical reaction.

GREATER BOSTON MEDICAL SOCIETY AND THE BETH ISRAEL HOSPITAL

A meeting of the Greater Boston Medical Society and the Beth Israel Hospital was held in the auditorium of the Hospital on December 3, 1929.

Dr. Leo Beurger of New York was the speaker of the evening. The subject under discussion was Thrombo-Angiitis Obliterans and the lecture was accompanied by numerous lantern slides.

Dr. Maurice Barron demonstrated three cases of thrombo-angiitis obliterans.

A discussion by Drs. Arthur W. Allen and Harry Linenthal followed the lecture.

A collation was served after the meeting.

The next meeting will take place on January 7, 1930.

LOUIS SILVER, *Secretary.*

SOUTH END NEIGHBORHOOD MEDICAL CLUB

The next regular meeting of the South End Neighborhood Medical Club will be held at the office of the Boston Tuberculosis Association, 554 Columbus Ave., Boston, on Tuesday, December 17, 1929, at 12 noon.

The speaker will be Dr. George H. Bigelow, Commissioner of Public Health, and his subject, "What Service the State Offers the General Practitioner". All physicians are cordially welcome.

The usual luncheon will be served.

BOSTON MEDICAL HISTORY CLUB

BOSTON MEDICAL LIBRARY, MONDAY, DECEMBER 16, AT 8.15 P. M.

Thomas Bartholinus on the Reading of Books, Dr. Fred B. Lund.

Maimonides, Hygiene of the Soul, Dr. Harry A. Savitz.

The Ideal Medical Library of the Fifteenth Century, James F. Ballard.

JAMES F. BALLARD, *Secretary.*

NEW ENGLAND ROENTGEN RAY SOCIETY

The next meeting of the New England Roentgen Ray Society will be held on December 20, 1929, at 8:15 P. M. at the Medical Library. The program will be as follows:

Roentgen Diagnosis in Pregnancy. Dr. Philip H. Cook, Worcester, Mass.

A Discussion of Benign Peptic Ulcer Occurring on the Greater Curvature. Dr. John Sproull, Haverhill, Mass.

The Presentation of Cases for Discussion. Dr. A. S. Merrill, Manchester, N. H.

Clinical and Roentgenological Presentation of Two Unusual Cases. Dr. Ralph Stewart, Lowell, Mass.

Two Cases of Serial X-rays on Pneumonia. One

Case of Miliary Tuberculosis. Dr. Jacob S. Kelley, Providence, R. I.

The papers will be limited to fifteen minutes.

THOMAS R. HEALY, *Secretary.*

NEW ENGLAND OPHTHALMOLOGICAL SOCIETY

The next meeting of the New England Ophthalmological Society will be held at the Massachusetts Eye and Ear Infirmary, 243 Charles Street, Boston, on Tuesday evening, December 17, 1929, at 8 P. M.

Clinical cases will be shown at 7.45 P. M.

PROGRAM

Clinical Cases:

1. Unusual Fields in Tabes. Dr. Terry.
2. Unilateral Exophthalmos in Leukaemia. Dr. Terry.
3. Meningioma. Dr. Jennings.
4. Partial Evulsion of Optic Nerve. Dr. Jennings.
5. Cure of Retrobulbar Neuritis of Luetic Origin by Forced Spinal Fluid Drainage. Dr. Dunphy.

Paper:

Cerebral Localization with Reference to the Eye. Dr. Edward W. Taylor.

E. B. DUNPHY, *Secretary.*

THE CLINICAL CONFERENCE OF THE NEW ENGLAND HOSPITAL FOR WOMEN AND CHILDREN

The regular clinical conference of the New England Hospital for Women and Children, Dimock Street, Roxbury, will be held at the hospital Thursday evening, December 19, at eight. The following cases will be presented: Cardiac decompensation complicating pregnancy; Neoplasm of kidney and bladder; Adenocarcinoma of ovary complicated by cardiac decompensation; Miliary tuberculosis with complications.

ALICE H. BIGELOW, M.D., *Secretary.*

CLINIC AT THE BOSTON CITY HOSPITAL

A clinic will be held at the Boston City Hospital, Saturday, December 21, 1929, 11:00 A. M. to 12:30 P. M., in the Cheever Amphitheater. Program:

ORAL SURGICAL

Dr. Thomas Hennessey, Fracture of the Jaws.

SURGICAL

Dr. Horace Binney, Carcinoma of the Lung and Liver.

Dr. James J. Hepburn, Multiple Perigastric Adhesions.

Dr. George W. Papen, Chronic Osteomyelitis.

MEDICAL

Dr. William H. Robey, Angina Pectoris—Clinical Notes.

Dr. Franklin W. White, Photography of the Stomach.

Dr. Louis J. Ullian, Clinical Classification of Thyroid Disorders.

SOCIETY MEETINGS, CONGRESSES AND CONFERENCES

1929-1930—Massachusetts Dietetic Association. Complete schedule appears on page 852, issue of October 24.

December 16—Boston Medical History Club. Detailed notice appears on page 1224.

December 16-17—The American Pharmaceutical Association. Complete notice appears on page 1019, issue of November 14.

December 17—New England Ophthalmological Society. Detailed notice appears elsewhere on this page.

December 17—South End Neighborhood Medical Club. Detailed notice appears on page 1224.

December 19—The Clinical Conference of the New England Hospital for Women and Children. Complete notice appears elsewhere on this page.

December 20—New England Roentgen Ray Society. Complete notice appears on page 1224.

December 21—Clinic at the Boston City Hospital. Complete notice appears elsewhere on this page.

January 6-7—The Sectional Meeting of the American College of Surgeons. Detailed notice appears on page 1181, issue of December 5.

January 7—The next meeting of the Greater Boston Medical Society will take place on this date.

February 3—American Heart Association. Complete notice appears on page 1181, issue of December 5.

February 10-14, 1930—American College of Physicians. Complete notice appears on page 853, issue of October 24.

March-October, 1930—International Medical Postgraduate Courses in Berlin. Complete notice appears on page 853, issue of October 24.

May 5-10, 1930—The International Congress on Mental Hygiene. Detailed notice appears on page 853, issue of October 24.

September 4-8, 1930—Fifth International Congress on Physiotherapy. Complete notice appears on page 906, issue of October 31.

DISTRICT MEDICAL SOCIETIES

Essex North District Medical Society

January 8, 1930—Wednesday—Semi-annual meeting at Centre Church Vestries, Main Street, corner of Vestry Street, opposite City Hall, Haverhill, (Telephone 548) at 12:30 sharp.

May 1—Thursday—Censors' meeting at Hotel Bartlett, 95 Main Street, Haverhill, (Telephone 3430) at 2 P. M. sharp. Candidates should present their diplomas to the Secretary one week in advance.

May 7—Wednesday—Annual Meeting.

J. FORREST BURNHAM, Secretary.

Essex South District Medical Society

Wednesday, January 8, 1930—At the Beverly Hospital. Clinic 5 P. M. Dinner 7 P. M. Speaker: Dr. Harry H. Germain, Boston. Subject: "Some Aspects of Cancer of the Colon." General Discussion from the floor.

Wednesday, February 5, 1930—Council Meeting, Boston.

Wednesday, February 12, 1930—Danvers State Hospital, Hathorne. Clinic 5 P. M. Dinner 7 P. M. Speakers: Dr. Winfred Overholser. Subject: "Criminology and Psychiatry." Mr. Clark, District Attorney for Essex County, who will speak on the legal aspect.

Wednesday, March 5, 1930—Lynn Hospital. Clinic 5 P. M. Dinner 7 P. M. Speaker: Dr. R. S. Titus, Boston. Subject: "Some Aspects of Caesarean Section," illustrated with Moving Pictures. General Discussion from the floor.

Wednesday, April 2, 1930—Hotel Hawthorne, Salem. Dinner at 7 P. M. Speaker: Dr. Timothy Leary, Boston. Subject: "Diagnostic and Therapeutic Pitfalls in Intracranial Pyogenic Infections."

Thursday, May 1, 1930—Censors meet for Examination of Candidates at Salem Hospital at 3:30 P. M.

Tuesday, May 13, 1930—Annual Meeting. The Tavern, Gloucester. Speaker: Dr. C. Macfie Campbell, Director of Boston Psychopathic Hospital. Subject to be announced later. Ladies invited. Dancing.

R. E. STONE, M.D., Secretary.

Franklin District Medical Society

The meetings of the Franklin District Medical Society will be held at the Weldon Hotel, Greenfield, Mass., on the second Tuesdays of January, March and May, at 11 A. M.

CHARLES MOLINE, Secretary.

Hampshire District Medical Society

Meetings of Hampshire District will occur at 11 A. M. the second Wednesdays of February and April and will be held at the Dickinson Hospital, Northampton. The annual meeting will be held in May.

LUTHER O. WHITMAN, M.D., Secretary.

Middlesex East District Medical Society

January 15—At Boston, Harvard Club.

March 12—At Melrose.

May 13—At Unicorn Country Club, Stoneham.

ALLAN R. CUNNINGHAM, Secretary.

Middlesex South District Medical Society

Winter meetings—jointly with Suffolk District.

April 16, 1930—Annual meeting. Commander Hotel, Cambridge. Program to be announced.

May, 1930—Censors' meeting.

ALEXANDER A. LEVI, Secretary.

Norfolk District Medical Society

January 27, 1930—Roxbury Masonic Temple. "Recent Advances in Diagnosis and Treatment of Syphilis." The speakers will be Drs. C. Morton Smith and Austin W. Cheever.

February 24, 1930—Roxbury Masonic Temple, 8:00. Dr. Edwin H. Place has been invited to read a paper and has been given carte blanche in the selection of his subject.

March 24, 1930—Roxbury Masonic Temple. Dr. Burton E. Hamilton. Subject to be announced.

May 6, 1930—Annual Meeting. Program to be announced.

The Censors meet for the examination of candidates, May 1, 1930, in the Roxbury Masonic Temple, 171 Warren Street, Roxbury, at 4:00 P. M.

Applications must be in the hands of the Secretary at least one week previous to date of examination.

Owing to inability to engage the Roxbury Masonic Apartments on the last Tuesday of the month, such meetings as will be held in the Roxbury Temple will be held Monday evenings as per the dates above.

FRANK S. CRUICKSHANK,
Secretary, Norfolk District Medical Society.

BOOK REVIEWS

Annals of The Pickett-Thomson Research Laboratory. Vol. IV-Parts I and II. Published in America by The Williams and Wilkins Company, Baltimore, U. S. A. Price $10.00.

Monograph I.—The Rôle of the Streptococci in Rheumatic Fever. Pp. 1-108. David Thomson. O.B.E., M.B., Ch.B., D.Ph., and Robert Thomson, M.B., Ch.B.

A most comprehensive and complete résumé and discussion of the work done on Rheumatic Fever throughout the world and the references used are up to date. Summing up this evidence the following conclusions are obtained: Rheumatic Fever is a definite, specific disease probably caused by a definite and specific organism. The disease is so often preceded or accompanied by a sore throat that it seems probable that the tonsil is the recipient of the infection, and that the infection is distributed throughout the system from that focus. The proof that the organism is a streptococcus has not been obtained completely, or actually. The chief weakness in the work of Birkhaug and Small has been their failure to investigate control individuals. Although their work is highly suggestive and promising it is not conclusive or proved.

Monograph II.—A Historical Survey of the Researches of the Rôle of Streptococci in Chorea. Pp. 111-123. Ibid.

An excellent résumé of the literature and investigations of Chorea. The authors accept Chorea as a manifestation of Rheumatic Fever. Its age and incidence correspond closely with the age and incidence of rheumatic fever and rheumatic carditis. The same organism which causes rheumatic fever (so far it appears to be a streptococcus) will be found to produce Chorea, probably.

Monograph III.—The Rôle of the Streptococci in Erythema Nodosum. Ibid. Pp. 127-130.

This section presents evidence to show that Erythema Nodosum is an infective disease, but it is not proved that a streptococcus is the cause.

Monograph IV.—A Historical Survey of Researches on the Rôle of the Streptococci in Carditis. Ibid. Pp. 133-213.

An excellent presentation of this subject. The survey shows that acute rheumatism affects the heart as a whole and that the lesion is a pancarditis. Rheumatic carditis is rare in adults whereas malignant and subacute bacterial or infective endocarditis is rare in children. Rheumatic heart disease is commonest between the ages 5-12.

One of the chief arguments against the streptococcal etiology of rheumatic carditis is the failure to produce true Aschoff bodies in animals by injections with the various non-hemolytic streptococci isolated from the lesions of acute rheumatism. Lesions occurring in hearts of normal rabbits simulate the appearance of Aschoff bodies.

The consensus is that subacute bacterial (infective) endocarditis is a distinct entity and must be distinguished from subacute and acute carditis of rheumatism and from acute ulcerative or malignant endocarditis.

After reviewing the original papers on the bacteriology of rheumatic fever and the various forms of endocarditis, it impresses one that though various streptococci have been found, in the majority of instances the type of streptococcus has not been identified with sufficient care and accuracy. The methods used for identification of the various streptococci, of which there are many varieties of each type, has been and is still confusing. The use of Warren Crowe's chocolate blood agar has been used by the authors in their work and they believe it offers a new method for the identification of streptococci.

Anyone interested in rheumatic fever and allied diseases can hardly afford not to read the above volume.

Monograph V.—The Rôle of the Streptococci in Acute and Subacute Suppurative Arthritis. Ibid. Pp. 253-268.

The evidence presented in this monograph shows clearly that the streptococci and pneumococci play a very important part in producing acute and subacute suppurative conditions of joints. Several varieties of streptococci have been found in these joint affections; streptococci pyogenes, scarlatinae, zymogenes and pneumococci (but differentiation of types has not been made).

Monograph VI.—A Historical Survey of Researches on the Rôle of the Streptococci in Chronic Arthritis. Ibid. Pp. 273-430.

"Chronic Rheumatism" comprises a large number of diseases. There are probably several hundred distinct varieties of streptococci. The streptococci of certain types can and do produce arthritis in experimental animals. The streptococci are the

most common organisms in the human body at all times. As a rule chronic arthritis is caused by organisms of low virulence. Access to the blood stream is from septic foci; tonsils primarily, although the skin, G.U. tract, teeth, etc, are other focal centers. The reason that more people do not have arthritis although they have foci of streptococci is because of the difference in types of streptococci. Crowe's chocolate blood agar medium is used to differentiate types of streptococci. This medium is used also in the control experiments. The low-grade streptococci may attack the body under favorable conditions (favorable in that the streptococci flourish) such as, chilling of the body, lack of sleep, diarrhoea, disturbed metabolism, etc. whereas under average conditions these streptococci are maintained in the body as harmless invaders.

The two parts of Volume IV are excellent from several points of view. The résumés are very complete, opinions are sane and the conclusions are fair. The rôle of the streptococcus in the production of disease may appear magnified to some but as presented by the authors it is logical. Ignorance of the methods used by them in their work is not sufficient to call for opinions of its value. When one compares their work with some of the work done in this country, the Thomson's work is much more complete and impersonal than a great deal of the material written and published about Arthritis in the U. S. A. The student of arthritis should read and study the above volume.

Surgical Diseases of the Thyroid Gland. By E. M. Eberts, R. R. Fitzgerald and Philip G. Silver. Lea & Febiger, Philadelphia, Publishers. 238 Pages. $3.50.

This book may be considered as a compend of the information which its authors have acquired during the treatment of some twenty-two hundred cases of thyroid disease in the Montreal General Hospital. The first half of the book is devoted to the embryology, physiology and pathology of the thyroid gland. The fact that the volume is only intended to be a compend is demonstrated by the limitation of the discussion of embryology to eight pages, anatomy and histology to ten pages and to eleven pages for the physiology and pathological physiology of the thyroid gland. The difficult subject of thyroid pathology is discussed in a clear and concise manner.

The second half of the book is taken up with a clinical discussion of the surgical lesions of the thyroid gland. The writers review the orthodox views commonly held for the treatment of exophthalmic goitre. It is interesting to note that the authors apparently agree with Dr. H. S. Plummer's theory of dysthyroidism and believe that in exophthalmic goitre there is not only an excess in the production of thyroxin but also some qualitative changes in its composition. With this and with certain other statements, such as those concerning iodin thyrotoxicosis, many writers disagree.

Considerable space is given to the consideration of the inflammations of the thyroid gland which have not, as a general rule, been considered as completely as they should be in many books upon the thyroid. The chapter on malignant disease of the thyroid is a summary of the present day viewpoint of thyroid malignancy and it emphasizes the importance of the early removal of thyroid adenomata to prevent malignancy.

This book is a short, concise compend of thyroid information which can be read within a very short time and can thus provide the busy practitioner with an excellent brief review of the usual methods of treatment of thyroid disease.

Gastric and Duodenal Ulcer. By Arthur E. Hurst and Matthew J. Stewart. Oxford Medical Publications. Oxford University Press, London. Price $20.00.

The reviewer can hardly recall having had greater enjoyment in the reading of a book, than he had from reading this one. Although the reviewer's interests are primarily surgical, with his viewpoint regarding the management of ulcer, he can find nothing with which to disagree with the authors of this extremely interesting and valuable contribution to the literature of gastric and duodenal ulcer.

It contains a very large amount of material and information based primarily on personal experiences, and correlated with an excellent review of literature pertinent to each subject as it is discussed.

Each chapter is followed by a very adequate bibliography. Mr. Hurst is eminently qualified to write on this subject, because of his contact and experiences with gastric and duodenal ulcer from a clinical point of view; and Mr. Stewart, because of his extraordinary experience in pathology with the Leeds material, is well qualified to discuss that aspect of gastric and duodenal ulcer and also its relation to malignancy.

To select quotations from the book would be difficult. There are so many paragraphs which would bear repetition in the review, that it is hardly possible to do more than to select one. This one is chosen because this statement could well be broadcast to the medical public, and if the warning were obeyed, many cases of early ulcer would be discovered at a stage when they could be much more readily managed and many cases of early carcinoma diagnosed when they were much more hopefully operable.

The statement appears under the head of "Cancer of the Stomach" and is: "In every case of gastric symptoms beginning after the age of thirty-five and lasting more than ten days, or a fortnight, a complete chemical and radiological investigation should be carried out, in addition to the ordinary clinical examination."

The practical value of the book is such that it can be read with pleasure and profit by the general physician. It likewise can be read with profit and pleasure by the gastro-enterologist who is dealing with gastric and duodenal ulcer in numbers, and lastly, it most certainly can be read with profit by the surgeon who is operating upon gastric and duodenal ulcers.

Materia Medica and Therapeutics by REYNOLD WEBB WILCOX, M.A., M.D. Twelfth Edition. P. Blakiston's Son & Co., Inc., Philadelphia. Price $5.00.

The twelfth edition of this book indicates that a thorough revision has been undertaken. The changes necessitated by the U.S.P. X, have been introduced. The organization of the material is systematic and orderly, which is a valuable feature when used as a text or reference.

The first portion on Materia Medica and Pharmacy contains a storehouse of information regarding drugs and their chemistry. The second portion is devoted to the application and toxicology of these drugs. The author has utilized wherever possible the National Formulary V. a book which the reviewer believes is not known or used widely enough.

Proceeding through the book, the following list of omissions was noted as being deemed worthy of inclusion either by virtue of proven experience or on the basis of current pharmacologic and medical literature. The use of sodium thiosulphate in metallic poisoning (page 241); the pre-operative use of calcium salts in jaundiced cases (page 269); the use and indications of hypo- and hyper tonic saline solutions (page 290); ammonium chloride as a diuretic (page 297); oxygen in pneumonia and pulmonary embolism, etc. (page 340); luminal and arsphenamine as causes of rashes (page 423); bismuth as an antisyphilitic drug (page 505); the use of thyroid in certain types of arthritis (page 641) and pituitrin in diabetes insipidus (page 645).

There is no mention of ephedrine, liver and parathyroid extracts, tryparsamide and the complex mercurial diuretics as novasural and salyrgan, none of which are too recent to be included at least for discussion. The description of digitalis action could be greatly improved and it is difficult to understand just what is to be gained by dividing up the action of this drug in involvement of the various valves.

The chief merit of this book lies in its materia medica, the inclusion of many practical facts regarding therapeutics and also many valuable formulae.

Diagnosis et Traitement de la Blennorrhagie. By DR. JULES JANET. Masson et Cie, Editeurs, Paris, 1929. 536 pages. Price 60 Fr.

In 1892 Janet proposed a new method for the treatment of gonorrhoea. This consisted in irrigating the urethra copiously and frequently with very weak solutions of potassium permanganate. For 35 years he has continued to treat his patients in this way; the results of this extensive experience are given to us in this book.

Janet's method of treatment, in brief, is as follows: very early cases which are suitable for abortive treatment are given by him instillations of argyrol 20% twice a day for 3 days; in a recent series of cases reported by him, 18% were cured in this way. Cases unsuited for the abortive treatment, or those in whom this treatment fails, are given irrigations of potassium permanganate. For the first 3 or 4 days, the irrigations are given twice a day, the strength of the solution being 1-20,000. After the fourth day, the treatment is given once a day, and the solution gradually increased in strength to 1-4000. Prostatic massage is not given except in stubborn cases, as Janet believes that most cases of prostatitis will clear up without any treatment except total irrigation of the urethra. He employs vaccines in prolonged cases.

Janet says that the success of his method depends upon close attention to the details of treatment, and in his book he describes most minutely the proper way to carry out these irrigations. He discusses gonorrhoea in the female and the vulvovaginitis of little girls; he goes most intensively into the question of determining whether or not a patient is cured. The various tests devised for proving this point are considered, but Janet concludes that no one method is absolutely reliable. He devotes a chapter to the research work which is being done on the treatment of this infection, and another to its treatment in hospitals and clinics.

One cannot read this book without being impressed by its depth and its scope. Very little more can be said about the clinical aspects of gonorrhoea. The actual pathology of the disease is neglected, but after all the title of the book is "Diagnosis and Treatment of Gonorrhoea." The book is written in a simple clear style, so that one who has any knowledge of French can read it almost as readily as if it were in English.

Le Métabolisme Basal by MARCEL LABBÉ and H. STÉVENIN. Masson et Cie., Paris, 1929. Price 40 fr.

This is a three-hundred page textbook on the subject of basal metabolism; a well systematized and lucid presentation, in general style not unlike several books that have been published in English, notably that by DuBois; as far as the reviewer knows, none has previously appeared in French.

The sources of animal heat, its regulation, and factors which affect it, are considered. The basal metabolism of the normal human being is fully discussed, and following this there is a review of the metabolism in disease, and the value of its determination is outlined. The appendix contains the DuBois and Harris-Benedict prediction tables.

The work is encyclopedic rather than critical; it contains but little original matter. The author is very familiar with the literature; the citations of American work are especially abundant. Indeed, one is impressed with the fact that, whereas the pioneer work on heat balance in the last century was largely European, the progress in human calorimetry in the last two or three decades has been made largely in America. This is due undoubtedly to the tremendous impetus that was given to research in this field, first by the work of Atwater and Benedict, and then by that of Lusk and his pupils.